

December 1983

MCIC-HB-01R  
Volume 3



AD-A141 901

# Damage Tolerant Design Handbook

A Compilation of Fracture and Crack-Growth Data  
for High Strength Alloys

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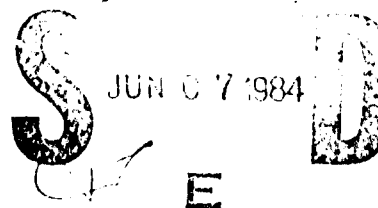
Metals and Ceramics Information Center  
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Prepared by

University of Dayton Research Institute

Materials Laboratory  
Air Force Wright Aeronautical Laboratories  
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SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER <b>MCIC-HB-01R (4 Volumes)</b>	2. GOVT ACCESSION NO. <b>10 4141901</b>	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) <b>DAMAGE TOLERANT DESIGN HANDBOOK. A COMPILATION OF FRACTURE AND CRACK GROWTH DATA FOR HIGH-STRENGTH ALLOYS</b>		5. TYPE OF REPORT & PERIOD COVERED
7. AUTHOR(s) <b>J. Gallagher</b>		6. PERFORMING ORG. REPORT NUMBER
9. PERFORMING ORGANIZATION NAME AND ADDRESS <b>University of Dayton Research Institute 300 College Park Avenue Dayton, OH 45469</b>		8. CONTRACT OR GRANT NUMBER(s) <b>F33615-80-C-5149 DLA900-83-C-1744</b>
11. CONTROLLING OFFICE NAME AND ADDRESS <b>Materials Laboratory (AFWAL/MLSE) Air Force Wright Aeronautical Laboratories (AFSC) Wright-Patterson AFB, OH 45433</b>		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		12. REPORT DATE <b>December 1983</b>
		13. NUMBER OF PAGES <b>3260</b>
		15. SECURITY CLASS. (of this report) <b>Unclassified</b>
16. DISTRIBUTION STATEMENT (of this Report) <b>Approved for Public Release; Distribution Unlimited</b>		15a. DECLASSIFICATION DOWNGRADING SCHEDULE
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES <b>Availability: Metals and Ceramics Information Center, P.O. Box 8128, Columbus, Ohio 43201 HC \$400.00 for 4 Volumes (No copies furnished by DTIC)</b>		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) <b>*Fracture (Mechanics), *Handbooks, *Titanium Alloys, *Nickel Alloys, *Stainless Steel, *Aluminum Alloys, High Strength Alloys, Structural Steel, Fracture Toughness, Damage Assessment, State of the Art, Data Compilation, Fatigue Crack Growth</b>		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) <b>This edition entirely revamps the 1975 edition. This edition is arranged by alloy rather than by property as in the previous addition. The data are presented in eight chapters and four volumes. Plane-strain fracture toughness (<math>K_{IC}</math>), critical plane stress fracture toughness, apparent fracture toughness, R-curve, fatigue crack growth rates, sustained-load crack growth rate and threshold stress intensity (<math>K_{ISCC}</math>) data are presented for stainless steels, titanium alloys, nickel-base alloys, alloy steels, 2000-, 6000- and 7000-series aluminum alloys.</b>		

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## Volume 3

# Damage Tolerant Design Handbook

A Compilation of Fracture and Crack Growth  
Data for High-Strength Alloys

Compiled by

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Sponsored by

Materials Laboratory

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December 1983

Metals and Ceramics Information Center

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Justification	<i>SET # 400</i>
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Distribution/	
Availability Codes	
Dist	Avail and/or Special
A-1	21

## **ACKNOWLEDGMENT**

This document was published by the Metals and Ceramics Information Center (MCIC), Battelle's Columbus Laboratories, 505 King Avenue, Columbus, Ohio 43201-2693. MCIC's objective is to provide a comprehensive current resource of technical information on the development and utilization of advanced metal- or ceramic-base metals.

MCIC is publishing this revised and expanded edition of the Damage Tolerant Design Handbook to increase the availability of information to the technical community. The loose leaf format was selected to facilitate updating the handbook as new information becomes available. This edition is a completely revised and expanded version of the original handbook first published by MCIC in 1972 and revised in 1973 and 1975.

The Center is operated by Battelle-Columbus under Contract Number DLA900-83-C-1744 for the U.S. Defense Logistics Agency; technical aspects of MCIC operations are monitored by the Office of the Deputy Under Secretary of Defense Research and Advanced Technology. The support of these sponsor organizations is gratefully acknowledged.

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TABLE 1.4  
ABBREVIATIONS FOR MATERIAL SYSTEMS

<u>Abbreviation</u>	<u>Materials</u>
ALUM	Aluminum Alloys
TITAN.	Titanium Alloys
NICKEL	Nickel-Base Alloys
STAIN. STEEL	Stainless Steel Alloys
ALLOY STEEL	Steel Alloys

TABLE 1.5  
ABBREVIATIONS FOR ALLOY CONDITIONING AND HEAT TREATMENTS

<u>Abbreviation</u>	<u>Condition/Heat Treatment</u>
OQ	Oil Quenched
ABQ	Aus-Bay Quench
AC	Air Cool
WC	Water Quench
MA	Mill Anneal
BA	Beta Anneal
DA	Duplex Anneal
RA	Recrystallize Anneal
ST	Solution Treated
STA	Solution Treated and Aged

TABLE 1.6  
ABBREVIATIONS FOR PRODUCT FORMS

<u>Abbreviations</u>	<u>Product Form</u>
S	Sheet
P	Plate
E	Extrusion
F	Forging
FB	Forged Bar
BT	Billet
BR	Round Bar
RB	Rolled Bar
C	Casting
W	Weldment
D	Disk
EB	Extruded Bar
B	Bar

TABLE 1.7  
ABBREVIATIONS FOR ENVIRONMENTAL SYSTEMS

<u>Abbreviations</u>	<u>Environmental System</u>
R. T.	Room Temperature (65°F-80°F)
L. H. A.	Low Humidity Air (< 10% RH)
Dry Air	Low Humidity Air (< 10% RH)
H. H. A.	High Humidity Air (> 80% RH)
Lab. Air	Laboratory Air (% RH unspecified)
Dist. H <sub>2</sub> O	Distilled Water
Dist. Water	Distilled Water
3.5 PCT NaCl	3.5% Salt Water Solution
JP.4	JP-4 Aircraft Fuel
JP.4 - Fuel	JP-4 Aircraft Fuel
S. T. W.	Sump Tank Water
S. S. W.	Simulated Sea Water
S. C. S.	Shop Cleaning Solvent
F. C. S.	Field Cleaning Solvent
Salt Fog	Salt Fog
Temp.	Temperature

TABLE 1.8  
ABBREVIATIONS FOR SPECIMEN DESIGNS

<u>Abbreviations</u>	<u>Specimen Design*</u>
CT	Compact Tension
NB	3Pt. Notched Bend
WOL	Wedge Open Load
CCP	Center Cracked Panel
BWOL	Bolt Loaded-Wedge Open Load
CANT	Cantilever Beam
TDCB	Tapered Double Cantilever Beam
CHAR	Charpy
PTSC	Part Through Surface Crack
SENT	Single Edge Notch Tension
K <sub>B</sub> BAR	K <sub>B</sub> Bar
4-NB	4 Pt. Notched Bend
MCT	Modified Compact Tension
CNT	Center Notched Tension
DCB	Double Cantilever Beam
BDCB	Bolt Loaded Double Cantilever Beam

\*Also note that when "SG" is used in conjunction with a specimen design, the specimen is side-grooved along the path of the crack.

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TABLE 7.0.1  
AVAILABLE DATA FOR ALUMINUM ALLOYS

ALLOY	CONDITION/HT	PRODUCT FORM	KIC	KC	R	CURVES	DA/DN	DA/DT	KISCC
2014	T451	PLATE					X		
	T6	FORGING	X						X
		FORGED BAR	X				X		
		SHEET		X			X		
		PLATE		X					
		ROLLED BAR					X		
	T61	FORGING	X						
	T611	FORGING	X						
	T651	PLATE	X	X				X	X
	T652	FORGING	X						
2020	T6	PLATE	X						
		EXTRUSION	X						
		SHEET		X			X		
	T651	PLATE	X	X			X		X
		SHEET		X					
		SHEET							
2020 (ALCLAD)	T6			X					
	T81								
	T81 OVERHEATED WELD								
	T81 REPAIR WELD + AGE WITH 2319 FILLER WIRE								
	T81 REPAIRED WELD AGED 16HR 325F WELD FUSION LINE								
	T81 REPAIRED WELD AGED 16HR 325F WELD CENTER LINE								
	T81 REPAIRED WELD AGED 16HR 325F HEAT AFFECTED ZONE								
	T81 WELD + AGE WITH 2319 FILLER WIRE								
		PLATE	X						X
		PLATE							X
		PLATE	X						
		PLATE							

TABLE 7.0.1 (con't)

## AVAILABLE DATA FOR ALUMINUM ALLOYS

ALLOY	CONDITION/HT	PRODUCT FORM	MC	KC	R	CURVES	DA/DN	DA/DT	KIBCC
2021	T81 WELDED AGED 16HR 325F HEAT AFFECTED ZONE	PLATE							X
	T81 WELDED AGED 16HR 325F WELD CENTER LINE	PLATE							X
	T81 WELDED AGED 16HR 325F FUSION LINE	PLATE							X
2024	T8151	PLATE	X						
	T3	SHEET PLATE		X X			X X		
	T351	PLATE EXTRUSION FORGED BAR SHEET	X X X		X		X	X	X
	T3511	EXTRUSION	X				X		
	T352	FORGING							X
	T36	SHEET		X					
	T4	SHEET FORGING		X				X	
	T42	PLATE					X		
	T6	SHEET		X					
	T62	SHEET						X	
	T62 (00)	SHEET PLATE		X					
	T62 (W0)	SHEET PLATE		X			X		
	T81	SHEET PLATE		X				X	
	T851	PLATE SHEET	X X				X X		X
	T8510	EXTRUSION	X						

TABLE 7.0.1 (con't)  
AVAILABLE DATA FOR ALUMINUM ALLOYS

ALLOY	CONDITION/HT	PRODUCT FORM	M1C	M2	R	CURVES	DA/DN	DA/DT	M1SCC
2024	T8511	EXTRUSION	X						
	T852	FORGING	X				X		X
	T86	SHEET		X					
	T861	SHEET PLATE					X X		
2024 (ALCLAD)	T3	SHEET		X			X		
	T86	SHEET		X					
2048	T851	PLATE	X				X		
	T351 (417)	PLATE	X						
2124	T851	PLATE	X	X			X		X
	T851 (8P)	PLATE	X						
	T851 (417)	PLATE	X						
	T651	PLATE	X						
2214	T651	PLATE	X						
	T651 (417)	PLATE	X						
2319	T37	PLATE						X	X
	T81	SHEET		X					
	T851	PLATE	X	X					X
		FORGING SHEET -----	X X X					X	

TABLE 7.0.1 (con't)

## AVAILABLE DATA FOR ALUMINUM ALLOYS

ALLOY	CONDITION/HT	PRODUCT FORM	MIC	KC	R CURVES	DA/DN	DA/DT	KISCC
2219	T8511	EXTRUDED BAR				X		
	T852	FORGING BILLET	X			X	X	
	T87	PLATE SHEET	X	X				X
	T87-300F 100HRS	PLATE	X					
		T39	PLATE				X	
2419	T851	PLATE	X			X		
2618	T61	SHEET		X				
	T651	PLATE	X					
	T81	SHEET				X		
6061	T6	SHEET		X				X
	T651	PLATE FORGED BAR	X	X		X		X
	T652	FORGING	X					X



TABLE 7.0.2

PLANE STRAIN FRACTURE TOUGHNESS VALUES OF ALUMINUM ALLOYS AT ROOM TEMPERATURE

ALLOY	CONDITION/ HT	PRODUCT FORM	RANGE OF PRODUCT THICKNESSES (IN)	K <sub>IC</sub> (KSI SQRT(IN))					
				L-T			T-L		
				SPECIMEN THICK #	MEAN	STD DEV.	SPECIMEN THICK #	MEAN	STD DEV.
2014	T6	FORGING	0.89-8.00	0.71	27.9	0.8	0.25	17.4	1.7
		FORGED BAR	4.50	---	---	---	0.25	16.7	0.6
	T611	FORGING	1.00	---	---	---	---	---	---
	T651	PLATE	1.00-5.00	1.00	23.3	1.0	1.00	21.4	1.2
	T652	FORGING	2.00-6.00	0.75	28.8	3.6	0.75	21.9	3.2
2020	T651	PLATE	1.37	1.00	23.0	2.4	1.00	17.2	0.3
2021	T81	PLATE	1.00	0.99	27.0	0.5	---	---	---
		PLATE	1.00	---	---	---	1.00	15.8	0.7
	T81 REPAIR WELD + AGE WITH 2319 FILLER WIRE			---	---	---	---	---	---
2024	T351	PLATE	2.00-3.00	1.00	35.0	7.1	---	---	---
		EXTRUSION	3.00-5.00	---	---	---	1.50	25.0	0.9
	T3511	EXTRUSION	---	1.20	38.0	2.6	---	---	---
	T851	PLATE	0.37-4.00	0.38	23.3	2.4	0.38	20.7	1.9
	T8510	EXTRUSION	2.76-4.50	1.86	30.4	2.7	2.00	16.5	1.0
	T8511	EXTRUSION	3.50	1.00	24.1	0.4	1.00	16.0	0.0
	T852	FORGING	2.00-6.00	0.75	29.2	5.2	0.75	18.9	2.6
2048	T851	PLATE	1.00-4.00	1.00	37.9	1.9	1.00	30.6	2.5

\* MINIMUM SPECIMEN THICKNESS (IN)

TABLE 7.0.2 (con't)

PLANE STRAIN FRACTURE TOUGHNESS VALUES OF ALUMINUM ALLOYS AT ROOM TEMPERATURE

ALLOY	CONDITION/ HT	PRODUCT FORM	RANGE OF PRODUCT THICKNESSES (IN)	K <sub>IC</sub> SORT (IN)					
				I-T			T-L		
				SPECIMEN THICK *	MEAN	STD DEV	SPECIMEN THICK *	MEAN	STD DEV
2124	T851	PLATE	0.62-6.00	0.50	29.7	2.8	0.50	25.1	2.3
	T851 (SP)	PLATE	2.00-6.00	0.75	27.2	4.7	0.75	23.1	2.7
	T851 (417)	PLATE	1.57-5.50	0.50	28.9	2.8	0.50	23.8	2.4
2214	T651	PLATE	1.50-2.37	1.00	35.3	2.7	1.00	31.8	0.9
	T651 (417)	PLATE	1.50-3.93	1.50	36.0	3.4	1.49	29.4	1.8
2219	T851	PLATE	1.00-3.25	0.97	33.4	2.3	0.75	29.7	3.2
		FORGING	-----	-----	-----	-----	-----	-----	-----
	T852	FORGING	2.00-7.50	1.50	39.2	3.2	1.50	27.1	2.2
T87	PLATE	PLATE	1.00-2.00	1.00	28.0	3.0	0.97	22.0	0.4
	T87-300F 100HRS	PLATE	1.50	1.47	34.8	0.4	-----	-----	-----
2419	T651	PLATE	1.75-3.00	1.50	42.6	5.3	1.40	37.2	4.2
	T651	PLATE	3.34	-----	-----	-----	-----	-----	-----
6061	T651	PLATE	1.50-2.50	-----	-----	-----	1.00	26.6	0.9

\* MINIMUM SPECIMEN THICKNESS (IN)

TABLE 7.0.3.1

PLANE STRESS AND TRANSITIONAL FRACTURE TOUGHNESS OF  
2000 AND 6000 SERIES ALUMINUM ALLOYS (WITH BUCKLING CONSTRAINTS)

ALLOY	CONDITION/HT	TEST TEMP., (°F)	SPECIMEN ORIENT	WIDTH	YIELD STRENGTH (KSI)	SPECIMEN THICKNESS (IN.) = 0.063	K <sub>c</sub> (KSI $\sqrt{\text{IN.}}$ )		
							0.100	0.125	0.200
2014	T6	-320	L-T	4.0	74.1	59.2/1.1(2)			
				18.0	74.1	74.2/3.2(4)			
		R. T.	L-T	16.0	68.4	65.0/3.4(5)			
				18.0	65.2	72.0/3.4(5)			
		-320	T-L	3.0	75.9	46.6/5.3(9)			
2024	T3 T62(GQ) T62(WQ)	R. T.	L-T	12.0	75.9	48.3/4.6(5)			
					75.9	49.7/3.9(15)			
		R. T.	L-T	30.0	51.9	108.9/8.2(3)			
			T-L	6.0	57.0		63.0/1.4(2)		
		R. T.	L-T	6.0	----		77.1/5.8(2)		
2124	T81	R. T.	L-T	16.0	----		139.2		
			T-L	6.0	----		72.4/2.1(2)		
		R. T.	L-T	6.0	64.8		65.4/3.8(2)		
			T-L	6.0	64.1		57.3/2.0(3)		
		R. T.	T-L	5.8	55.0				50.9/2.0(4)
2219	T87	-423	L-T	16.0	73.8	90.6/3.2(2)			
				24.0	58.5		90.6/15.0(6)		
		R. T.	L-T	48.0	58.5		109.8/12.1(7)		

Mean/Standard Deviation (Number of Specimens)

TABLE 7.0.3.2  
PLANE STRESS AND TRANSITIONAL FRACTURE TOUGHNESS  
OF 2000 AND 6000 SERIES ALUMINUM ALLOYS (WITHOUT BUCKLING CONSTRAINTS)

ALLOY	CONDITION/H.T.	TEST TEMP. (°F)	SPECIMEN ORIENT	SPECIMEN WIDTH	YIELD STRENGTH (Ksi)	SPECIMEN THICKNESS (IN.) = 0.063	$K_c$ (Ksi $\sqrt{in.}$ )		
							0.127	0.250	0.400
									1.000
2014	T6	-423	T-L	4.0	31.8	59.1/3.5(5)			
		R. T.	T-L	15.8	65.4	58.4/2.7(5)			
2020	T6	R. T.	L-T	2.0	76.5	34.6/7.0(5)			
				3.0	75.9	30.2/1.3(2)			
			T-L	15.8	76.9	36.9/2.9(4)			
				2.0	75.9	30.5/6.6(5)			
				3.0	75.8	27.8/0.8(2)			
				15.8	75.6	34.5/2.0(5)			
2020(Alclad)	T6	R. T.	L-T	3.0	76.3		41.3/2.7(12)	26.4/0.3(3)	
				4.0	77.4			24.2/2.3(3)	
			T-L	20.0	76.3				30.5/2.5(11)
				3.0	77.5		23.5/2.4(12)	17.2/2.6(3)	
				4.0	78.0			20.9/0.1(2)	19.4/0.8(12)
				20.0	78.0				
2020(Alclad)	T6	R. T.	L-T	15.8	68.0	34.1/1.8(2)			
				3.0	68.6		40.2/3.3(7)		
			T-L	15.8	67.2	33.9/1.2(2)			
				3.0	68.4		30.4/5.0(7)		

Mean/Standard Deviation (Number of Specimens)

TABLE 7.0.3.2 (con't)

PLANE STRESS AND TRANSITIONAL FRACTURE TOUGHNESS  
OF 2000 AND 6000 SERIES ALUMINUM ALLOYS (WITHOUT BUCKLING CONSTRAINTS)

ALLOY	CONDITION/H.T.	TEST TEMP. (°F)	SPECIMEN ORIENT	SPECIMEN WIDTH	YIELD STRENGTH (Ksi)	SPECIMEN THICKNESS (IN.) = 0.063	0.127	0.250	0.400	1.000
2024	T351 31	R. T.	L-T	20.0	58.2					
		R. T.	T-L	6.0	62.0	57.9/3.2(2)				107.1/1.8(2)
				9.0	62.0	61.2/5.1(3)				
				15.0	62.0	54.6/0.0(2)				
				18.0	62.0	54.6/0.7(2)				
	T851			21.0	62.0	55.9/2.9(2)				
				24.0	62.0	52.2/0.9(2)				
		R. T.	L-T	20.0	66.0		44.8/1.7(9)	31.3/2.5(6)		48.4/3.8(12)
			T-L	3.0	65.4			47.1/8.1(7)		
				4.0	66.2					
2124	T86			20.0	65.0					33.7/1.9(12)
		R. T.	L-T	15.8	72.9	53.0/4.7(5)				
			T-L	2.0	71.6	42.5/0.6(4)				
				15.8	71.2	45.9/2.3(5)				
	T851	R. T.	L-T	6.0	55.0				68.9/2.3(2)	
			T-L	3.0	59		36.2/2.3(6)			
2219	T851	R. T.	L-T	20.0	51.1					84.7/9.0(10)
	T87	R. T.	L-T	16.0	57.7	75.9/1.1(2)				66.3/4.2(12)

Mean/Standard Deviation (Number of Specimens)

TABLE 7.0.4.1

COMPARISON OF FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS OF THE  
STRESS INTENSITY FACTOR FOR ALUMINUM ALLOYSTEST CONDITIONS

SPECIMEN ORIENTATION L-T ENVIRONMENT LAB AIR AT R.T.  
STRESS RATIO: 0.00-0.10 FREQUENCY: 0.10-30.00HZ

ALLOY	CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQUENCY	FATIGUE CRACK GROWTH RATES (MICRO IN./CYCLE) FOR DELTA K LEVELS (KSI SQRT(IN)) =				
					2.5	5.0	10.0	20.0	50.0
2014	T6	SHEET	0.05	2.00			6.41		
2020	T6	SHEET	0.00	13.30				104	
	T651	PLATE	0.00	5.20			3.45		
2024	T3	SHEET	0.00	13.30				28.6	
	T3	PLATE	0.05	20.00			4.36		
	T351	SHEET	0.00	3.00- 6.00			6.16	44.0	
	T351	PLATE	0.00	1.00- 16.00					2324
	T351	PLATE	0.00	5.00- 20.00		156			
	T351	PLATE	0.01	1.00- 10.00		205	7.09	39.8	
	T351	PLATE	0.01	20.00			5.98	52.1	
	T351	PLATE	0.10	3.00				55.0	
	T351	PLATE	0.10	20.00			8.62		
	T3511	EXTRUSION	0.05	9.00		129			
	T42	PLATE	0.02	10.00			4.25	23.6	1131
2124	T81	SHEET	0.05	2.00			8.08	68.1	
	T851	PLATE	0.02	1.00- 10.00			3.92	57.0	
	T851	PLATE	0.02	1.00- 30.00		0474	272	3.84	56.7

TABLE 7.0.4.1 (con't)

COMPARISON OF FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS OF THE  
STRESS INTENSITY FACTOR FOR ALUMINUM ALLOYSTEST CONDITIONSSPECIMEN  
ORIENTATION: L-T

ENVIRONMENT: LAB AIR AT R.T.

STRESS RATIO 0.00-0.10

FREQUENCY: 0.10-30.00HZ

ALLOY	CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQUENCY	FATIGUE CRACK GROWTH RATES (MICRO IN./CYCLE) FOR DELTA K LEVELS (KSI SQRT(IN)) =					
					2.5	5.0	10.0	20.0	50.0	100.0
2219	T851	PLATE	0.00	5.20			8.25	54.8		
	T851	PLATE	0.00	6.00			4.33	34.6		
	T851	PLATE	0.01	3.00				44.5	1622	
	T851	PLATE	0.01	6.00				46.2	1788	
	T851	PLATE	0.01	1.00- 20.00				44.9		
	T851	PLATE	0.04	1.00- 20.00			4.24			
	T851	PLATE	0.05	1.00- 20.00			2.46	33.9		
	T851	PLATE	0.05	1.00- 20.00			3.58			
	T851	PLATE	0.05	1.00- 20.00			5.14	48.3		
	T851	PLATE	0.08	6.00			5.74			
T851	PLATE	0.10	1.00- 20.00				44.9			
2419	T851	PLATE	0.10	30.00			6.30	53.9		
4041	T651	PLATE	0.00	10					57.4	

TABLE 7.0.4.2

COMPARISON OF FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS OF THE  
STRESS INTENSITY FACTOR FOR ALUMINUM ALLOYS

TEST CONDITIONS

SPECIMEN  
ORIENTATION T-L

ENVIRONMENT: LAB AIR AT R T

STRESS RATIO 0.00-0.10

FREQUENCY: 0.10-30.00 HZ

ALLOY	CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQUENCY	FATIGUE CRACK GROWTH RATES (MICRO IN./CYCLE) FOR DELTA K LEV S			
					2.5	5.0	10.0	100.0
2014	T6	SHEET	0.05	2.00				
	T6	FORGING	0.05	30.00				
2024	T3	SHEET	0.00	13.30				
	T3	SHEET	0.05	30.00				
	T861	SHEET	0.08	10-15.00				
	T861	SHEET	0.10	10-4				
	T861	SHEET	0.10	10-15.00				
	T861	SHEET	0.10	10-15.00				
	T861	SHEET	0.10	10-15.00				
	T861	SHEET	0.10	10-15.00				
	T861	SHEET	0.10	10-15.00				
	T861	SHEET	0.10	10-15.00				
2419	T861	PLATE	0.10	10-15.00				
	T861	PLATE	0.10	10-15.00				
	T851	PLATE	0.10	10-15.00				



TABLE 7.0.5

STRESS CORROSION CRACKING THRESHOLD DATA FOR 2000 AND 6000  
SERIES ALUMINUM ALLOYS AT ROOM TEMPERATURE

ALLOY	CONDITION/HT	PRODUCT FORM	SPECIMEN ORIENTATION	ENVIRONMENTS						K <sub>ISCC</sub> (Ksi $\sqrt{\text{in.}}$ )	
				INDUSTRIAL ATMOSPHERE	SEACOAST ATMOSPHERE	SUMP TANK WATER	3.5% NaCl	SALT DICHROMATE ACETATE	SYNTHETIC SEAWATER		SHOP CLEANING SOLVENT
2014	T6	F	S-L								
	T651	P	S-L	7.0	7.0			7.0	16.0		
2020	T651	P	S-L				9.0				
2021	T81	P	S-L	19.0	19.0			19.0			
	T81-Overheated Weld	P	S-L				11.3				
	T81-Repaired Weld-Aged 16HR 325F-Weld Fusion Line						7.7				
	T81- Repaired Weld-Aged 16HR 325F-Heat Affected Zone	P	S-L				11.9				
	T81-Welded Aged 16HR 325F Weld Center Line	P	S-L				7.2				
	T81-Welded Aged 16HR 325F Heat Affected Zone	P	S-L				13.3				
	T81-Welded Aged 16HR 325F Fusion Line	P	S-L				8.5				

TABLE 7.0.5 (con't)

STRESS CORROSION CRACKING THRESHOLD DATA FOR 2000 AND 6000  
SERIES ALUMINUM ALLOYS AT ROOM TEMPERATURE

ALLOY	CONDITION/HT	PRODUCT FORM	SPECIMEN ORIENTATION	ENVIRONMENTS						$K_{Iacc}$ (Ksi $\sqrt{in.}$ )		
				INDUSTRIAL ATMOSPHERE	SEACOAST ATMOSPHERE	SUMP	TANK	WATER	3.5% NaCl		SALT DICHROMATE ACETATE	SYNTHETIC SEAWATER
2024	T351	P	S-L	10.0	10.0				10.0	9.0		
	T851	P	L-T						21.5			
	T852	F	L-T					22.5(2)		15.0		28.1(2)
			T-L				20.2(2)					
			S-L				20.0					
2124	T851	L-T S-L					26.6(3)					
							22.7(3)					
2219	T37	P	S-L	13.0	13.0					9.0		
	T851	P	L-T					34.5(2)				34.3(3)
	T87	P	T-L					27.0				
			S-L	19.0	19.0					19.0		
6061	T651	P	S-L	20.0	20.0					20.0		

TABLE 7.1.1.1

MEAN PLANE STRAIN FRACTURE TOUGHNESS DATA OF  
ALUMINUM ALLOY 2014 AT ROOM TEMPERATURE

CONDITION/HT	MEAN K <sub>IC</sub> ± STANDARD (KSI SQRT(IN)) DEVIATION	(NUMBER OF SPECIMENS)
PLATE		
	L-I	S-L
T651	23.3 ± 1.0 (10)	21.4 ± 1.2 (19) 17.8 ± 0.1 (2)
FORGING		
	L-I	S-L
T6	27.9 ± 0.8 (2)	17.4 ± 1.7 (4) 16.9 ± 1.9 (5)
T611	-----	----- 17.8 ± 0.6 (2)
T652	28.8 ± 3.6 (12)	21.9 ± 3.2 (13) 18.1 ± 1.4 (3)
FORGED BAR		
	L-I	S-L
T6	-----	16.7 ± 0.6 (2) -----

TABLE 7.1.1.2

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR  
ALUMINUM 2014

TEST CONDITIONS

SPECIMEN  
ORIENTATION 1-1

ENVIRONMENT LAB AIR  
AT R T

CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQ (Hz)	DELTA K LEVELS (KSI SQRT(IN))	2	5	10	20	50	100
T6	SHEET	0.05	2.00				6.41			
T6	SHEET	0.25	2.00				9.59			
T6	SHEET	0.40	2.00				13.7	13.5		
T6	SHEET	0.50	2.00				1.57			
T6	SHEET	0.57	2.00				1.02			

TABLE 7.1.1.3  
FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR  
ALUMINUM 2014

TEST CONDITIONS

SPECIMEN  
ORIENTATION T-C

ENVIRONMENT LAB AIR  
AT R 1

CONDITION/HI	PRODUCT FORM	STRESS RATIO	FREQ (HZ)	DELTA K LEVELS (KSI SQRT(IN))	2	5	10	20	50	100
T6	SHEET	0.05	2.00				7.03			
T6	SHEET	0.25	2.00				11.0			
T6	SHEET	0.40	2.00			1.29	16.2			
T6	SHEET	0.50	2.00			1.59				
T6	SHEET	0.57	2.00			1.25				
T6	FORGING	0.05	---				1.49			

TABLE 7.1.1.1.4

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR

ALUMINUM 2014

TEST CONDITIONS

SPECIMEN  
ORIENTATION T-L

ENVIRONMENT H H A  
A I R T

CONDITION/MT	PRODUCT FORM	STRESS RATIO	FREQ HZ	DELTA K LEVELS (KSI SQRT(IN))	2 5	5	10	20	50	100
T6	FORGING	0.05				1.20	22.0			
T6	FORGING	-1.00	9.00			1.26	17.4			

TABLE 7.1.2.1

CONDITION	ALUMINUM				2014			K(1C)			K(1C) STAN DEV	DATE	REFER	
	--PRODUCT-- FORM	THICK (IN)	TEST TEMP (F)	SPECIMEN ORIENT	YIELD STRENGTH (KSI)	-----SPECIMEN-----		CRACK LENGTH (IN)	2.5* (K(1C)/TVB)**2 (IN)	K(1C) MEAN (KSI*SQRT IN)				
						WIDTH (IN)	THICK (IN)							A
T6	F	0.89 0.89	R.T.	L-T	63.8 63.8	1.500 1.500	0.714 0.713	NB NB	0.798 0.778	0.50 0.46	28.50 27.30	27.9/ 0.8	1973 1973	86213 86213
T6	F	0.89 0.89 0.89 0.89	R.T.	T-L	62.4 62.4 63.0 63.0	0.500 0.500 0.490 0.500	0.249 0.249 0.249 0.249	NB NB NB NB	0.266 0.269 0.258 0.266	0.15 0.17 0.23 0.21	15.50 16.50 19.20 18.20	17.4/ 1.7	1973 1973 1973 1973	86213 86213 86213 86213
T6	F	0.89	84	T-L	62.4	1.500	0.750	CT	0.753	0.14	14.90		1973	86213
T6	F	8.00 8.00 8.00	R.T.	S-T	61.0 61.0 61.0	2.000 2.000 2.000	1.000 1.000 1.000	NB NB NB	1.000 ----- 1.000	0.24 0.24 0.24	19.10 19.10 19.00	19.1/ 0.1	1972 1972 1972	82675 82675 82675
T6	F	8.00 8.00 8.00 1.00	R.T.	S-L	61.0 61.0 61.0 63.8	1.000 1.000 1.000 1.500	1.000 1.000 1.000 0.749	NB NB NB CT	0.500 ----- 0.500 0.778	0.18 0.17 0.18 0.25	16.40 15.70 16.40 15.70	16.9/ 1.9	1972 1972 1972 1973	82675 82675 82675 86213
T6	F	----- -----	R.T.	L-C	63.8 63.8	1.500 1.500	0.750 0.750	NB NB	0.750 0.750	0.50 0.46	28.50 27.30	27.9/ 0.8	1972 1972	82879 82879
T6	F	----- ----- ----- -----	R.T.	C-L	62.7 62.7 62.7 62.7	0.500 1.500 1.500 0.500	0.250 0.750 0.750 0.250	NB CT CT NB	0.250 0.750 0.750 0.250	0.21 0.14 0.13 0.23	18.20 15.10 14.30 19.20	16.7/ 2.4	1972 1972 1972 1972	82879 82879 82879 82879
T6	FB	4.50	R.T.	L-T	64.2	1.490	0.689	NB	0.737	0.49	28.40		1973	86213
T6	FB	4.50 4.50	R.T.	T-L	62.4 62.4	0.500 0.500	0.249 0.249	NB NB	0.258 0.267	0.19 0.17	17.10 16.30	16.7/ 0.6	1973 1973	86213 86213
T6	FB	4.50	82	T-L	62.4	1.500	0.749	CT	0.762	0.19	17.40		1973	86213
T6	FB	4.50 4.50	85	T-L	62.4 62.4	1.500 1.500	0.750 0.751	CT CT	0.783 0.749	0.21 0.18	17.90 16.60	17.3/ 0.9	1973 1973	86213 86213

TABLE 7.1.2.1 (Con't)

CONDITION	ALUMINUM				2014				K(1C)					
	--PRODUCT--		TEST SPECIMEN ORIENT	YIELD STRENGTH (KSI)	-----SPECIMEN-----		CRACK LENGTH (IN) A	2.5* K(1C)/(TVS)**2 (IN)	K(1C) MEAN DEV (KSI*SQRT IN)	K(1C) STAN	DATE	REFER		
	FORM	THICK (IN)			THICK (IN)	WIDTH (IN) B							THICK (IN)	
T61	F	1.50 1.50	R.T.	S-T	56.6 56.6	1.000 1.000	0.500 0.500	CT CT	0.486 0.508	0.31 0.31	19.90 19.90	19.9/ 0.0	1973 1973	86213 86213
T61	F	1.95 1.95	B2	S-L	62.4 62.4	1.000 1.000	0.499 0.499	CT CT	0.491 0.479	0.22 0.20	18.70 17.70	18.2/ 0.7	1973 1973	86213 86213
T611	F	1.00 1.00	R.T.	S-L	60.2 60.2	1.490 1.490	0.750 0.749	CT CT	0.783 0.771	0.23 0.21	18.20 17.30	17.8/ 0.6	1973 1973	86213 86213
T611	F	1.00 1.00 1.00 1.00	B6	S-L	61.3 61.3 62.0 62.0	1.500 1.500 1.500 1.500	0.749 0.749 0.747 0.749	CT CT CT CT	0.778 0.767 0.797 0.802	0.24 0.23 0.23 0.23	19.00 18.60 18.50 18.80	18.7/ 0.2	1973 1973 1973 1973	86213 86213 86213 86213
T651	P	1.50 1.50	B8	L-S	66.7 66.7	1.000 1.000	0.500 0.499	CT CT	0.490 0.503	0.31 0.33	23.40 24.10	23.8/ 0.5	1973 1973	86213 86213
T651	P	5.00 2.50 2.50 1.00 1.00 1.00 1.00 1.75 1.75 1.75	R.T.	L-T	58.6 64.4 64.4 66.4 66.4 66.4 66.4 68.4 68.4 68.4	2.000 1.970 2.000 2.000 2.000 2.000 2.000 2.000 1.970 1.970	0.999 1.001 1.000 1.020 1.018 1.019 1.020 0.999 0.978 0.979	NB CT CT NB NB NB NB NB NB NB	0.975 0.970 0.966 0.966 0.970 0.961 1.000 0.957 0.960 0.960	0.37 0.33 0.34 0.35 0.32 0.35 0.33 0.26 0.27 0.27	22.40 23.30 23.60 24.70 23.60 24.80 24.00 21.90 22.40 22.30	1.0	1973 1973 1973 1973 1973 1973 1973 1973 1973 1973	86213 86213 86213 86213 86213 86213 86213 86213 86213 86213
T651	P	1.00 1.00 1.00 1.00	B4	L-T	62.7 63.5 66.4 66.4	2.000 2.000 2.000 2.000	1.001 1.002 1.002 1.002	CT CT CT CT	1.006 0.966 0.973 0.949	0.39 0.26 0.29 0.30	24.90 20.30 22.50 23.00	23.3/ 1.6	1973 1973 1973 1973	86213 86213 86213 86213
T651	P	1.50	B8	L-T	66.7	1.000	0.501	CT	0.499	0.21	19.20		1973	86213



TABLE 7.1.2.1 (Con't)

CONDITION	ALUMINUM										K (IC)									
	--PRODUCT--		TEST TEMP (F)	SPECIMEN ORIENT	YIELD STRENGTH (KSI)	-----SPECIMEN-----		CRACK		2.5* (IN)	K (IC)/TYS)**2 (IN)	K (IC) MEAN (KSI*SQRT IN)	STAN DEV	DATE	REFER					
	FORM	THICK (IN)				WIDTH (IN)	THICK (IN)	DESIGN	LENGTH (IN)							A	B			
T651	P	1.50	88	L-T	66.7	1.000	0.501	CT	0.499	0.21	19.30	19.30	0.2	1973	86213					
		1.50			66.7	1.000	0.501	CT	0.491	0.21			0.2	1973	86213					
	P	1.50	88	T-S	63.2	1.000	0.500	CT	0.504	0.33	22.80	22.80		1973	86213					
		1.50			63.2	1.000	0.500	CT	0.506	0.30	21.80	21.80		1973	86213					
T651	P	1.00	- 320	T-L	75.0	2.000	1.020	NB	1.010	0.30	26.10	26.10	0.0	1971	84288					
		1.00			75.0	2.000	1.018	NB	1.008	0.30	26.10	26.10	0.0	1973	86213					
	P	5.00	R. T.	T-L	57.8	2.000	1.000	NB	0.997	0.27	19.10	19.10		1973	86213					
		1.00			65.8	2.000	1.016	NB	0.981	0.23	20.10	20.10		1973	86213					
T651		1.00			65.8	2.000	1.016	NB	0.960	0.24	20.20	20.20		1973	86213					
		1.00			65.8	2.000	1.016	NB	0.989	0.26	20.90	20.90		1971	84288					
		1.00			65.8	2.000	1.016	NB	0.985	0.26	20.90	20.90		1971	84288					
		1.00			65.8	2.000	1.022	NB	1.008	0.27	21.80	21.80		1973	86213					
		1.00			65.8	1.970	1.023	NB	1.000	0.28	22.00	22.00		1973	86213					
		1.00			65.8	2.000	1.016	NB	0.966	0.24	20.30	20.30		1973	86213					
		1.00			65.8	2.000	1.000	CT	1.084	0.26	21.20	21.20		1973	86213					
		1.00			65.8	2.000	1.016	NB	0.970	0.25	21.00	21.00		1971	84288					
		1.00			65.8	2.000	1.023	NB	0.980	0.28	21.90	21.90		1973	86213					
		1.00			65.8	2.000	1.022	NB	1.023	0.29	22.30	22.30		1973	86213					
		1.00			65.8	2.000	1.023	NB	0.997	0.28	22.10	22.10		1973	86213					
		1.00			65.8	2.000	1.016	NB	0.961	0.25	20.70	20.70		1973	86213					
		1.00			65.8	2.000	1.016	NB	1.001	0.24	20.70	20.70		1971	84288					
		1.00			65.8	2.000	1.016	NB	0.998	0.29	22.60	22.60		1971	84288					
		1.75			66.2	2.000	0.997	NB	1.058	0.32	23.60	23.60		1973	86213					
		1.75			66.2	2.000	1.000	NB	0.980	0.29	22.50	22.50		1973	86213					
													21.4/	1.2	1973	86213				
	T651	P	1.00	84	T-L	63.5	2.000	1.002	CT	0.981	0.27	20.70	20.70		1973	86213				
			1.00			65.8	2.000	1.000	CT	0.984	0.22	19.50	19.50		1973	86213				
		1.00			65.8	2.000	1.001	CT	0.978	0.23	20.00	20.00		1973	86213					
		1.00			65.8	2.000	1.001	CT	0.964	0.22	19.60	20.0/	0.5	1973	86213					
T651	P	1.50	88	T-L	63.2	1.000	0.500	CT	0.500	0.22	18.70	18.70	0.7	1973	86213					
		1.50			63.2	1.000	0.500	CT	0.519	0.24	19.70	19.70	0.7	1973	86213					
651	P	5.00	R. T.	S-L	55.0	1.000	0.501	NB	0.529	0.26	17.90	17.90		1973	86213					

TABLE 7.1.2.1 (Con't)

CONDITION	ALUMINUM						K(1C)									
	---PRODUCT--- FORM	THICK (IN)	TEST TEMP (F)	SPECIMEN ORIENT	YIELD STRENGTH (KSI)	-----SPECIMEN-----			CRACK LENGTH (IN)	2.5* (K(1C)/TYS)**2 (IN)	K(1C) STAN					
						WIDTH (IN)	THICK (IN)	DESIGN			K(1C) MEAN (KSI*SQRT IN)	DEV	DATE	REFER		
															W	B
T651	P	5.00	R.T.	S-L	55.0	1.000	0.498	NB	0.522	0.26	17.70	17.8/	0.1	1973	86213	
T652	F	5.00	R.T.	L-T	60.7	3.000	1.500	NB	1.498	0.62	30.20				1970	77720
		5.00			60.7	3.000	1.500	NB	1.460	0.54	28.20				1970	77720
		5.00			60.7	3.000	1.500	NB	1.530	0.58	29.20				1970	77720
		4.00			62.5	3.000	1.502	NB	1.485	0.75	34.20				1970	77720
		4.00			62.5	3.000	1.502	NB	1.577	0.80	35.40				1970	77720
		4.00			62.5	3.000	1.502	NB	1.442	0.69	32.80				1970	77720
		3.00			66.2	2.000	1.000	NB	0.925	0.39	26.30				1970	77720
		3.00			66.2	1.990	1.000	NB	0.970	0.40	26.50				1970	77720
		3.00			66.2	2.000	1.000	NB	0.968	0.42	27.10				1970	77720
		2.00			66.5	1.500	0.750	NB	0.688	0.39	24.90				1970	77720
		2.00			66.5	1.500	0.752	NB	0.728	0.33	24.30				1970	77720
		2.00			66.5	1.500	0.751	NB	0.752	0.41	26.90	28.8/	3.6		1970	77720
T652	F	5.00	R.T.	T-L	57.3	3.000	1.500	NB	1.662	0.24	17.90				1970	77720
		5.00			57.3	3.000	1.500	NB	1.597	0.33	20.70				1970	77720
		5.00			57.3	3.000	1.500	NB	1.612	0.31	20.10				1970	77720
		6.00			57.7	4.000	2.005	NB	2.092	0.49	25.40				1970	77720
		6.00			57.7	4.000	2.004	NB	2.215	0.39	22.80				1970	77720
		6.00			57.7	4.000	2.003	NB	1.987	0.66	29.80				1970	77720
		4.00			59.2	3.000	1.502	NB	1.562	0.37	22.70				1970	77720
		4.00			59.2	3.000	1.502	NB	1.497	0.38	23.00				1970	77720
		4.00			59.2	3.000	1.502	NB	1.642	0.40	23.70				1970	77720
		2.00			64.9	1.500	0.754	NB	0.748	0.22	19.20				1970	77720
		2.00			64.9	1.500	0.753	NB	0.727	0.22	19.30				1970	77720
		3.00			65.1	2.000	0.999	NB	1.030	0.24	20.30				1970	77720
3.00			65.1	1.990	0.999	NB	1.025	0.22	19.50	21.9/	3.2		1970	77720		
T652	F	5.00	R.T.	S-L	56.1	1.000	0.500	NB	0.467	0.29	17.80				1970	77720
		5.00			56.1	1.000	0.501	NB	0.470	0.31	19.60				1970	77720
		5.00			56.1	1.000	0.498	NB	0.510	0.22	16.80	18.1/	1.4		1970	77720

TABLE 7.1.2.2

CONDITION	ALUMINUM		2014		K(C)																							
	--PRODUCT-- FORM	THICK TEMP OR (IN) (F)	TEST SPEC (KSI)	YIELD (KSI)	CRACK LENGTH		GROSS STRESS																					
					W	R	INIT (IN)	FINAL (IN)	ONSET (KSI)	MAX (KSI)	K(1) (KSI)	S(O) (KSI)	S(MAX)															
T6	S	0 06 - 423 L-T	83.4	83.4	4 000	0 062	1 220	1 700	---	41 80	61 43	77 08*	1963 51527															
														0 06	4 000	0 062	1 240	1 620	---	42 00	59 82	73 02*	1963 51527					
T6	S	0 06 - 320 L-T	74.1	74.1	3 990	0 063	1 230	1 420	---	37 00	54 67	60 02	1963 51527															
														0 06	3 990	0 063	1 230	1 740	---	38 20	56 73	74 77*	1963 51527					
T6	S	0 06 - 320 L-T	74.1	74.1	3 990	0 063	1 230	1 410	---	36 20	53 49	56 8/ 2 8	1963 51527															
														0 06	3 990	0 063	1 230	1 410	---	36 20	53 49	56 8/ 2 8	78 91	74 2/ 3 2	1963 51527			
T6	S	0 06 R T L-T	66.2	67.5	2 000	0 067	0 625	0 980	---	38 10	40 16*	55 78*	1973 86213															
														0 06	2 000	0 064	0 625	0 770	---	38 60	40 68*	56 01*	71 77	72 73	1963 51527			
T6	S	0 06 R T L-T	65.2	67.5	2 000	0 063	0 620	0 860	---	40 10	42 09*	52 76*	1973 86213															
														0 06	2 000	0 064	0 625	1 020	---	38 30	40 37*	58 11*	52 36*	54 19*	55 45*	51 50*	50 27*	1963 51527
T6	S	0 06 R T L-T	65.2	67.5	2 000	0 063	1 230	1 550	---	37 80	55 85*	65 15*	1963 51527															
														0 06	4 000	0 063	1 250	1 550	---	37 90	56 55*	65 29*	62 20	1973 86213				

\*NOTE- NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STD DEV

TABLE 7.1.2.2 (Con't)

CONDITION	ALUMINUM		2014		K(C)											
	--PRODUCT-- FORM	THICK (IN)	TEST SPEC TEMP OR (F)	YIELD STR (KSI)	--SPECIMEN--		CRACK LENGTH CROSS STRESS									
					WIDTH (IN)	THICK (IN)	INIT (IN)	FINAL (IN)	ONSET (KSI)	MAX (KSI)	K (APP) (KSI*SQRT IN)	STAN DEV	K (C) (KSI*SQRT IN)	STAN DEV	DATE	REFER
T6	S	0 06	R T	L-T	68 4	15 810	0 064	3 010	3 570	---	27 40	60 95	67 00	---	1973 86213	---
		0 06			68 4	15 810	0 064	4 000	5 230	---	22 50	58 73	69 22	---	1973 86213	---
		0 06			68 4	15 820	0 064	6 000	7 000	---	16 10	54 33	60 92	---	1973 86213	---
		0 06			68 4	15 820	0 064	1 000	1 520	---	42 10	52 89	65 43	65 0/ 3 4	1973 86213	---
T6	S	0 06	R T	L-T	65 2	18 040	0 063	5 490	6 350	---	20 70	64 51	70 87	---	1963 51527	---
		0 06			65 2	18 040	0 063	5 490	6 110	---	20 60	64 20	68 75	---	1963 51527	---
		0 06			65 2	18 060	0 063	5 490	6 400	---	20 80	64 82	71 58	---	1963 51527	---
		0 06			65 2	18 060	0 063	5 490	6 800	---	21 70	67 62	77 84	---	1963 51527	---
T6	S	0 06			65 2	18 060	0 063	5 480	6 300	---	20 80	64 74	70 82	72 0/ 3 4	1963 51527	---
T6	S	0 06	- 320	T-L	75 9	3 000	0 058	0 130	0 210	---	63 70	28 82*	36 70*	---	1967 68908	---
		0 06			75 9	3 000	0 058	0 130	0 160	---	63 30	28 64*	31 79*	---	1967 68908	---
		0 06			75 9	3 000	0 058	0 300	0 410	---	49 90	34 47	40 51	---	1967 68908	---
		0 06			75 9	3 000	0 059	0 300	0 430	---	49 70	34 33	41 37	---	1967 68908	---
T6	S	0 06			75 9	3 000	0 059	0 300	0 420	---	50 40	34 81	41 44	---	1967 68908	---
		0 06			75 9	3 000	0 061	0 500	0 850	---	43 40	39 13	52 79	---	1967 68908	---
		0 06			75 9	3 000	0 061	0 130	0 190	---	66 50	30 09*	36 42*	---	1967 68908	---
		0 06			75 9	3 000	0 060	1 000	1 400	---	30 50	41 08	52 47	---	1967 68908	---
T6	S	0 06			75 9	3 000	0 061	0 500	0 580	---	42 10	37 96	41 14	---	1967 68908	---
		0 06			75 9	3 000	0 061	1 010	1 300	---	30 40	41 21	49 28	---	1967 68908	---
		0 06			75 9	3 000	0 060	0 500	0 730	---	44 20	39 86	49 14	---	1967 68908	---
		0 06			75 9	3 010	0 061	1 000	1 390	---	29 90	40 25	51 08	46 6/ 5 3	1967 68908	---
T6	S	0 06	- 320	T-L	75 9	6 000	0 061	0 130	0 200	---	64 90	29 34*	36 40*	---	1967 68908	---
		0 06			75 9	6 000	0 060	0 130	0 200	---	66 80	30 19*	37 47*	---	1967 68908	---
		0 06			75 9	6 000	0 061	0 250	0 380	---	56 20	35 26	43 53	---	1967 68908	---
		0 06			75 9	6 000	0 061	0 250	0 370	---	56 50	35 44	43 17	---	1967 68908	---
T6	S	0 06			75 9	6 000	0 060	0 130	0 180	---	65 90	29 79*	35 06*	---	1967 68908	---
		0 06			75 9	6 000	0 061	2 000	2 540	---	22 30	42 47	50 21	---	1967 68908	---
		0 06			75 9	6 000	0 061	2 000	2 550	---	22 90	43 62	51 72	---	1967 68908	---
		0 06			75 9	6 000	0 061	2 000	2 580	---	23 10	44 00	52 64	45 15*	1967 68908	---
T6	S	0 06			75 9	6 000	0 061	0 250	0 400	---	56 80	35 63	45 15*	48 3/ 4 4	1967 68908	---
T6	S	0 06	- 320	T-L	75 9	12 000	0 059	0 260	0 400	---	57 50	36 76	45 61	---	1967 68908	---



ALUMINUM	2014	K(C)
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\*NOTE- NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STD. DEV.

TABLE 7.1.2.2 (Con't)

ALUMINUM															2014		K(C)					
CONDITION	--PRODUCT-- FORM	THICK (IN)	TEST SPEC OR (F)	YIELD STR (KSI)	---SPECIMEN---					CRACK LENGTH				CROSS STRESS		K(APP)		K(C)		STAN DEV	DATE	REFER
					WIDTH (IN)	THICK (IN)	W B	INIT (IN)	FINAL (IN)	ONSET (KSI)	MAX (KSI)	K(APP) (KSI)	MEAN (KSI)	STAN DEV (KSI)	K(C) (KSI)	MEAN (KSI)	STAN DEV (KSI)					
																		2A(D)	2A(F)			
BUCKLING OF CRACK EDGES NOT RESTRAINED																						
T651	P	0.25	R. T.	L-T	62.2	4.000	0.249	1.330	2.120	---	32.80	50.92	72.96*	1973	86213							
		0.25			62.2	4.000	0.248	1.400	2.310	---	32.00	51.39	77.66*	1973	86213							
		0.25			64.3	4.000	0.252	1.400	2.380	---	32.10	51.55	80.52*	1973	86213							
		0.25			64.3	4.000	0.251	1.330	2.260	---	33.90	52.63	80.38*	1973	86213							
		0.25			64.3	4.000	0.252	1.330	2.140	---	33.50	52.01	51.7/ 0.6	1973	86213							
T651	P	1.00	R. T.	L-T	66.4	20.000	1.000	6.950	9.950	---	14.50	51.82	68.04	1973	86213							
T651	P	0.25	R. T.	T-L	60.7	4.000	0.250	1.420	2.110	---	26.20	42.48	58.02*	1973	86213							
		0.25			60.7	4.000	0.250	1.330	1.960	---	27.20	42.23	56.32*	1973	86213							
		0.25			62.2	4.000	0.252	1.330	1.840	---	27.10	42.07	53.20*	1973	86213							
		0.25			62.2	4.000	0.252	1.410	2.140	---	25.90	41.79	58.14*	1973	86213							
		0.25			62.2	4.000	0.252	1.330	1.900	---	27.20	42.23	42.2/ 0.3	1973	86213							
T651	P	1.00	R. T.	T-L	63.8	20.000	1.000	6.940	9.370	---	9.10	32.49	40.55	1973	86213							

\*NOTE- NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STD. DEV.

TABLE 7.1.3.1

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.1.3.1 INDICATING EFFECT  
OF STRESS RATIO

MATERIAL: ALUMINUM		2014			
CONDITION: T6					
ENVIRONMENT: R. T. , LAB AIR					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		R=+0.05	R=+0.25	R=+0.40	
DELTA K MIN	A:	5.69	.79		
	B:	5.86	2.14		
	C:	4.82		1.16	
	D:				
		5.00		1.37	
		6.00	1.06	2.27	2.74
		7.00	2.11	3.39	4.39
		8.00	3.38	4.90	6.46
		9.00	4.80	6.91	9.30
		10.00	6.41	9.59	13.5
		13.00	13.6	24.0	
DELTA K MAX	A:	13.77	16.4		
	B:	14.47	36.6		
	C:	11.62		26.0	
	D:				
ROOT MEAN SQUARE		8.62	9.37	5.28	
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8	1			
RATIO	0.8-1.25	5	4	4	
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				



CONDITION/HT: T6  
 FORM: 0.04- 0.06" TH SHEET  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T  
 FREQUENCY: 2.00 HZ  
 ENVIRONMENT: R. T., LAB AIR

YIELD STRENGTH: 67.0 KSI  
 ULT. STRENGTH: 74.0 KSI  
 SPECIMEN THK: 0.040- 0.064"  
 SPECIMEN WIDTH: 6.000"  
 REFERENCES: 86734

ALUM.  
 ALLOY

2014

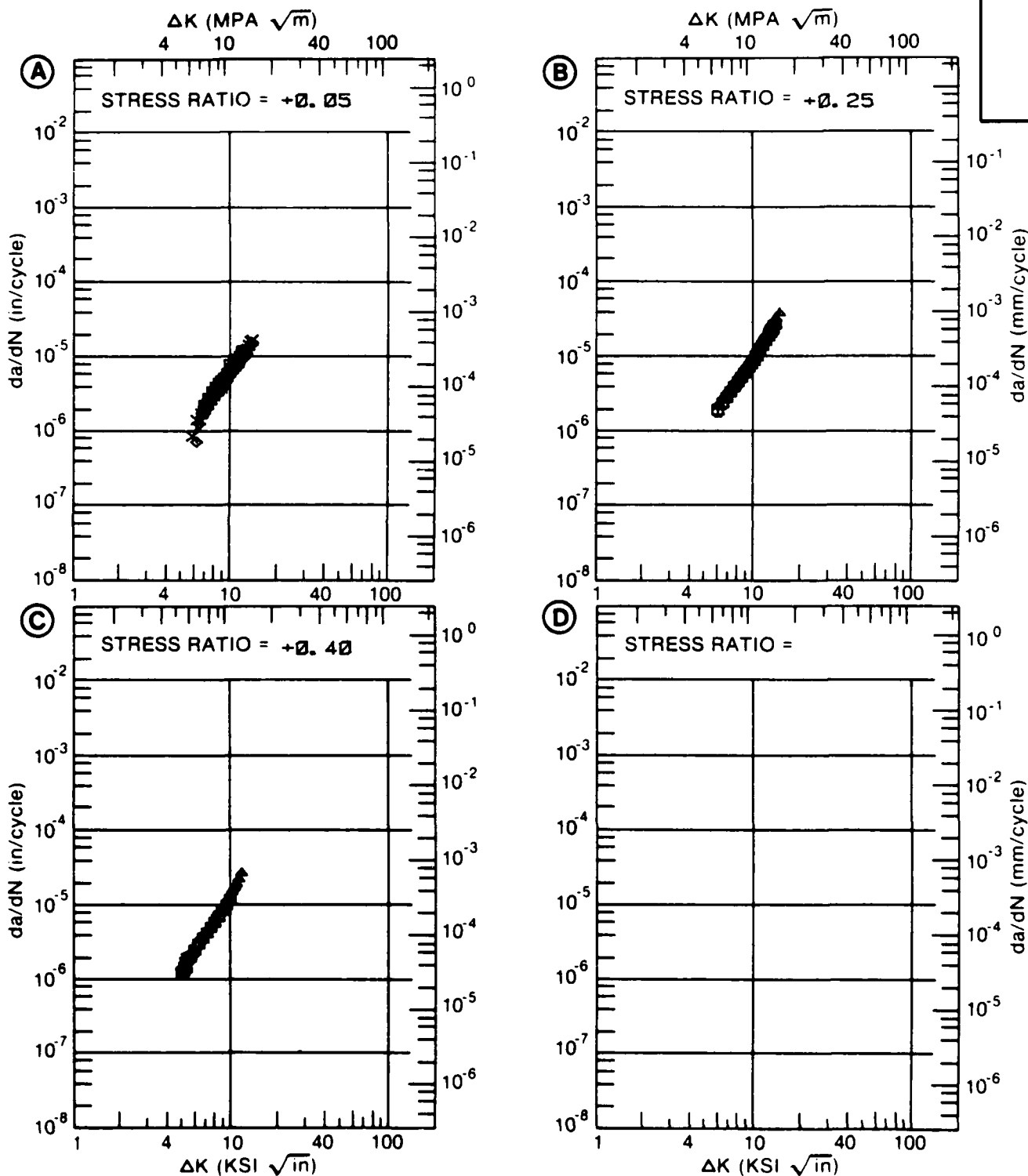


Figure 7.1.3.1

## FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS OF STRESS INTENSITY FACTOR

MATERIAL: ALUMINUM 2014  
CONDITION: T6  
ENVIRONMENT: R. T., LAB AIR

7.1-16

CONDITION/HT: T6  
 FORM: 0.04- 0.06" TH SHEET  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T  
 FREQUENCY: 2.00  
 ENVIRONMENT: R. T., LAB AIR

YIELD STRENGTH: 67.0 KSI  
 ULT. STRENGTH: 74.0 KSI  
 SPECIMEN THK: 0.040- 0.063"  
 SPECIMEN WIDTH: 6.000"  
 REFERENCES: 96734

ALUM.  
 ALLOY

2014

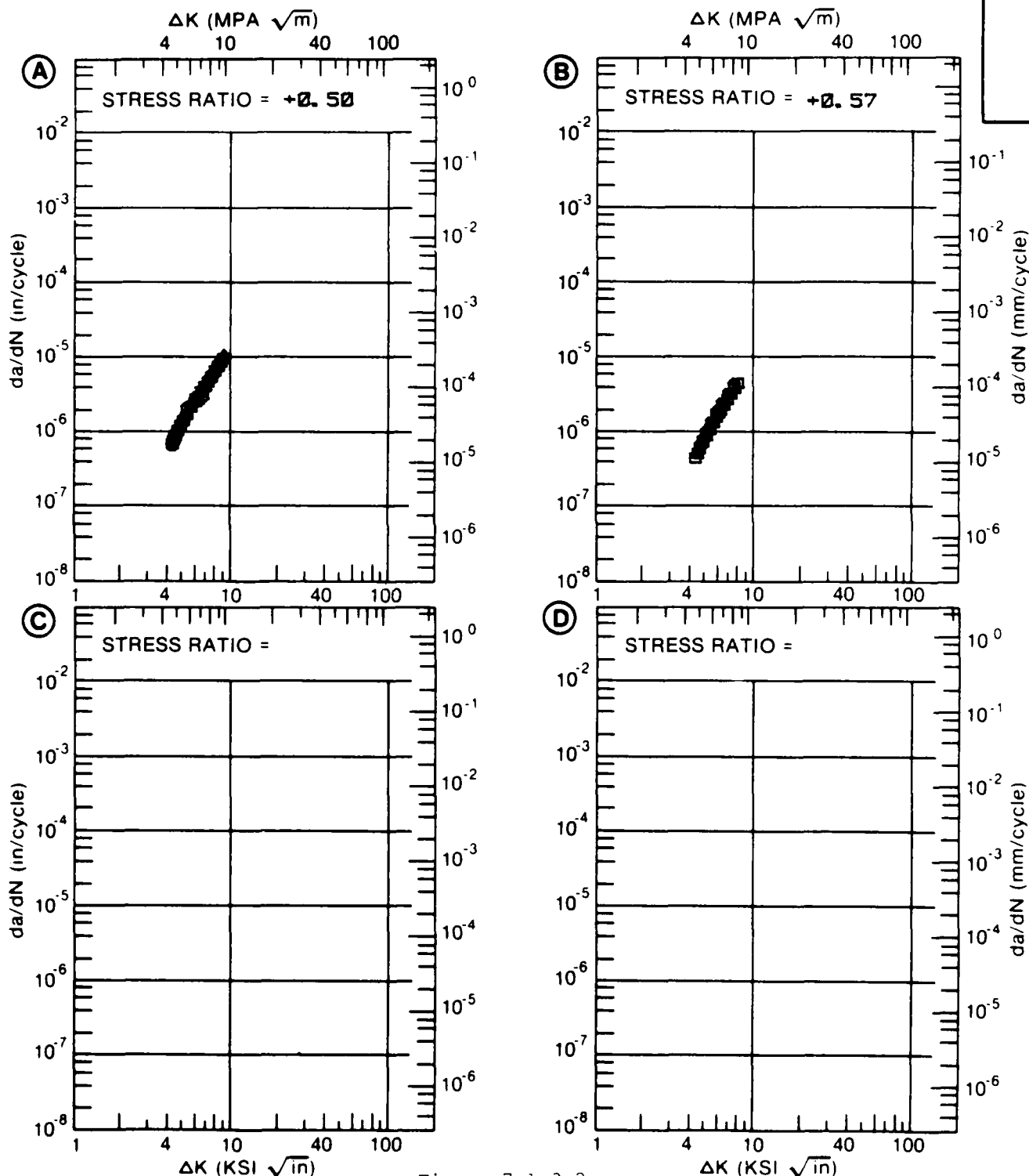


Figure 7.1.3.2

TABLE 7.1.3.3

**FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR**

**DATA ASSOCIATED WITH FIGURE 7.1.3.3 INDICATING EFFECT  
OF STRESS RATIO**

MATERIAL: ALUMINUM		2014			
CONDITION: T6					
ENVIRONMENT: R. T., LAB AIR					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		R=+0.05	R=+0.25	R=+0.40	
A:	5.65	1.11			
DELTA K B:	5.54		1.61		
MIN C:	4.88			1.14	
D:					
	5.00			1.29	
	6.00	1.39	2.10	2.70	
	7.00	2.33	3.42	4.40	
	8.00	3.50	5.18	6.66	
	9.00	5.00	7.60	10.2	
	10.00	7.03	11.0	16.3	
	13.00	19.8			
A:	13.51	23.9			
DELTA K B:	12.91		33.1		
MAX C:	11.48			36.6	
D:					
ROOT MEAN SQUARE		12.89	12.95	13.84	
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8	1			
RATIO	0.8-1.25	3	4	4	
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION/HT: T6  
 FORM: 0.04- 0.06" TH SHEET  
 SPECIMEN TYPE: CCP  
 ORIENTATION: T-L  
 FREQUENCY: 2.00  
 ENVIRONMENT: R. T., LAB AIR

YIELD STRENGTH: 67.0 KSI  
 ULT. STRENGTH: 74.0 KSI  
 SPECIMEN THK: 0.040- 0.063"  
 SPECIMEN WIDTH: 6.000"  
 REFERENCES: 86734

ALUM.  
 ALLOY

2014

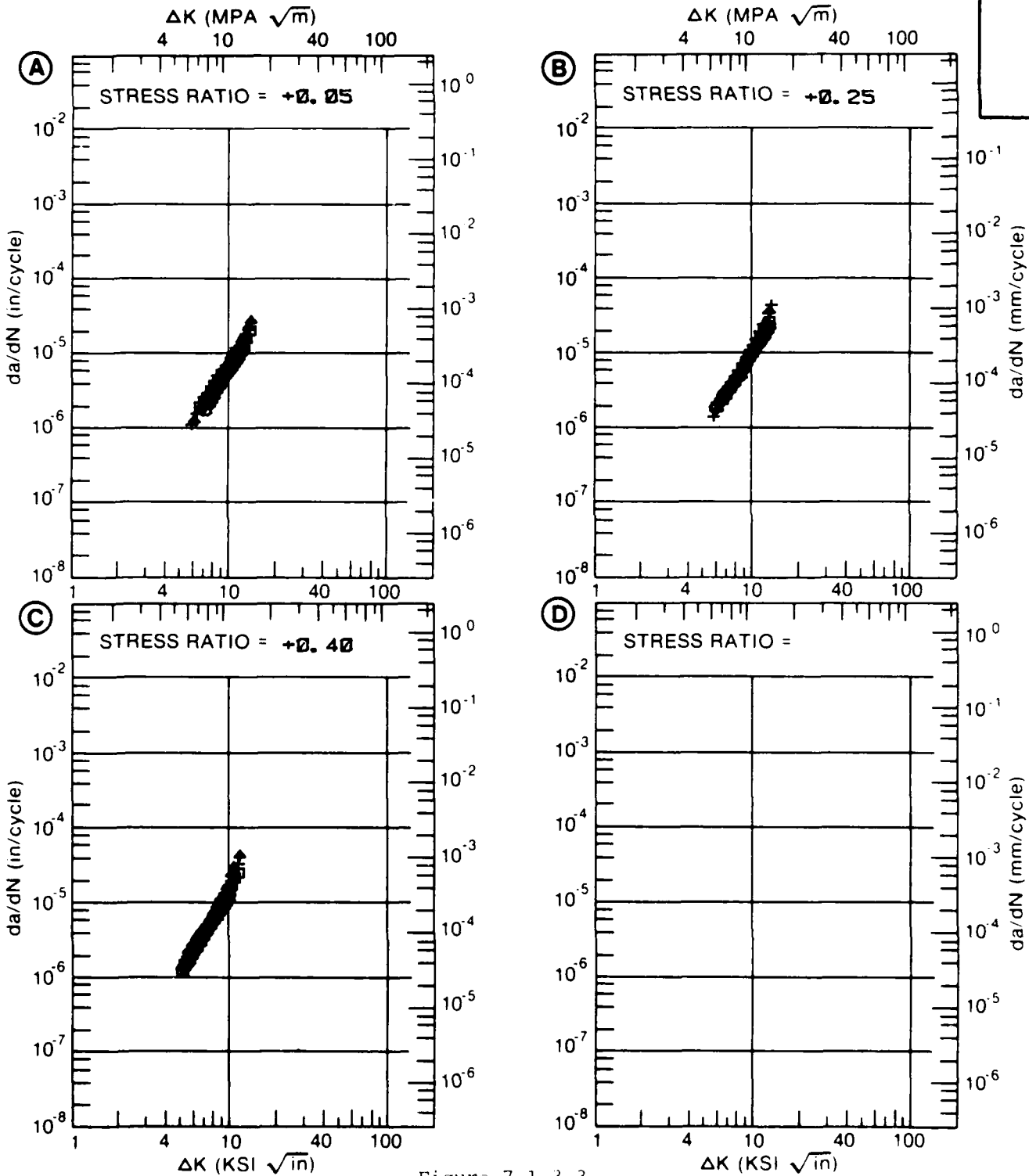


Figure 7.1.3.3

TABLE 7.1.3.4

**FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR**

**DATA ASSOCIATED WITH FIGURE 7.1.3.4 INDICATING EFFECT  
OF STRESS RATIO**

MATERIAL: ALUMINUM		2014				
CONDITION: T6						
ENVIRONMENT: R. T., LAB AIR						
DELTA K (KSI*IN**1/2)		:	DA/DN (10**-6 IN./CYCLE)			
		:	A	B	C	D
		:	R=+0.50	R=+0.57		
DELTA K MIN	A:	4.17	.731			
	B:	3.66		.345		
	C:					
	D:					
		:				
	4.00	:		.497		
	5.00	:	1.59	1.25		
	6.00	:	3.10	2.56		
	7.00	:	5.36	4.39		
	8.00	:	8.87			
DELTA K MAX	A:	8.66	12.3			
	B:	7.88		6.28		
	C:					
	D:					
		:				
ROOT MEAN SQUARE			11.45	16.08		
PERCENT ERROR						
LIFE	0.0-0.5					
PREDICTION	0.5-0.8	1				
RATIO	0.8-1.25	3		4		
SUMMARY	1.25-2.0					
(NP/NA)	>2.0					

CONDITION/HT: T6  
 FORM: 0.04- 0.06" TH SHEET  
 SPECIMEN TYPE: CCP  
 ORIENTATION: T-L  
 FREQUENCY: 2.00  
 ENVIRONMENT: R. T., LAB AIR

YIELD STRENGTH: 67.0 KSI  
 ULT. STRENGTH: 74.0 KSI  
 SPECIMEN THK: 0.040- 0.063"  
 SPECIMEN WIDTH: 6.000"  
 REFERENCES: 86734

ALUM.  
 ALLOY

2014

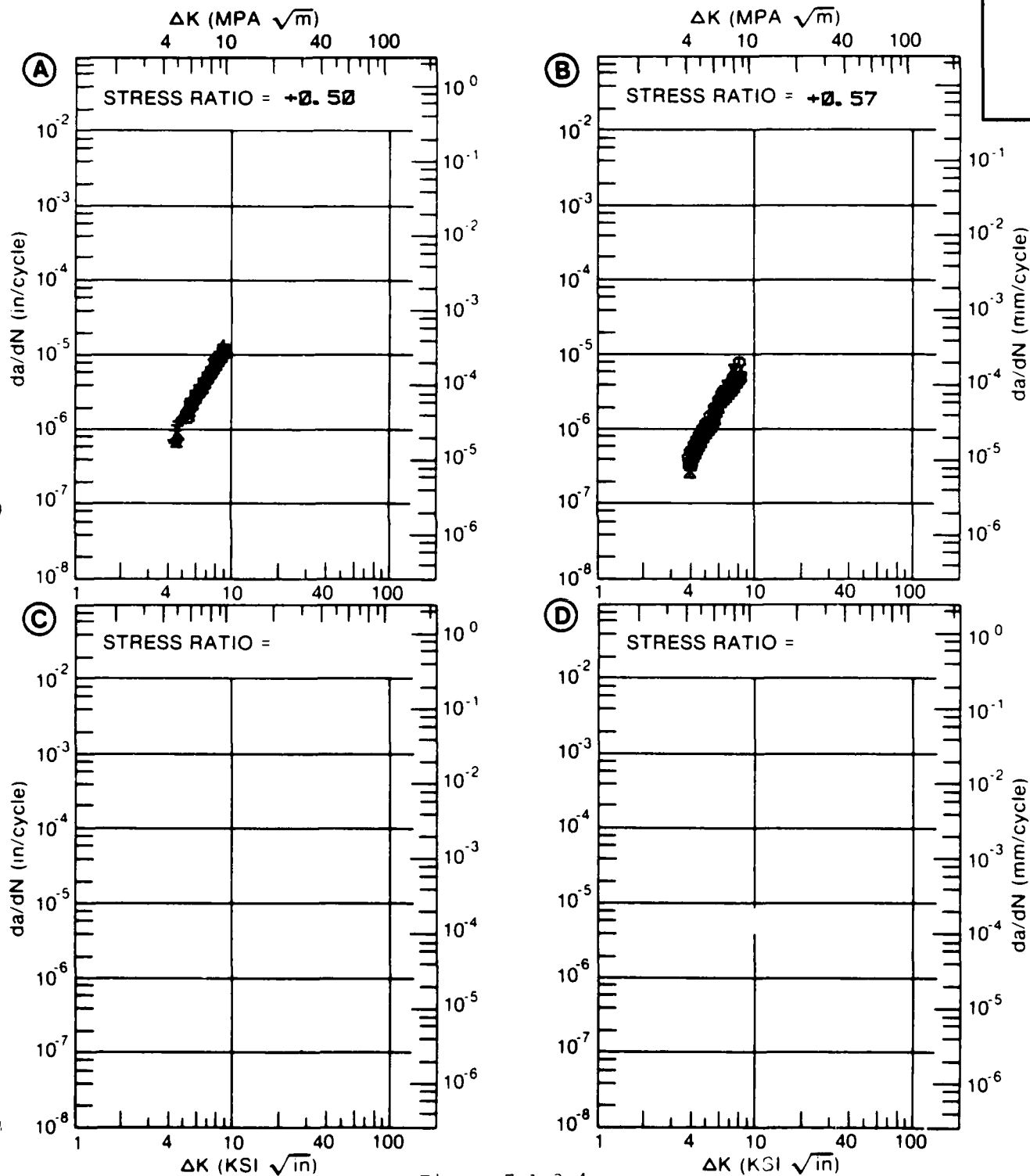


Figure 7.1.3.4

TABLE 7.1.3.5

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.1.3.5 INDICATING EFFECT  
OF ENVIRONMENT

MATERIAL: ALUMINUM  
CONDITION: T6

2014

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R. T. LAB AIR	E= R. T. H. H. A.		
DELTA K MIN	A:	6.53	.315		
	B:	4.08	.543		
	C:				
	D:				
	5.00		1.20		
	6.00		2.41		
	7.00	.479	4.42		
	8.00	.885	7.73		
	9.00	1.35	13.2		
	10.00	1.93	22.0		
	13.00	7.89	97.4		
DELTA K MAX	A:	15.67	60.8		
	B:	15.39	309.		
	C:				
	D:				

ROOT MEAN SQUARE  
PERCENT ERROR

18.38

21.24

LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25  
SUMMARY 1.25-2.0  
(NP/NA) >2.0



CONDITION/HT: T6  
 FORM: FORGING  
 SPECIMEN TYPE: CT  
 ORIENTATION: T-L  
 STRESS RATIO: +0.05  
 FREQUENCY:

YIELD STRENGTH: 64.1 KSI  
 ULT. STRENGTH: 69.2 KSI  
 SPECIMEN THK: 0.400"  
 SPECIMEN WIDTH: 2.000- 4.000"  
 REFERENCES: BW001

ALUM.  
 ALLOY

2014

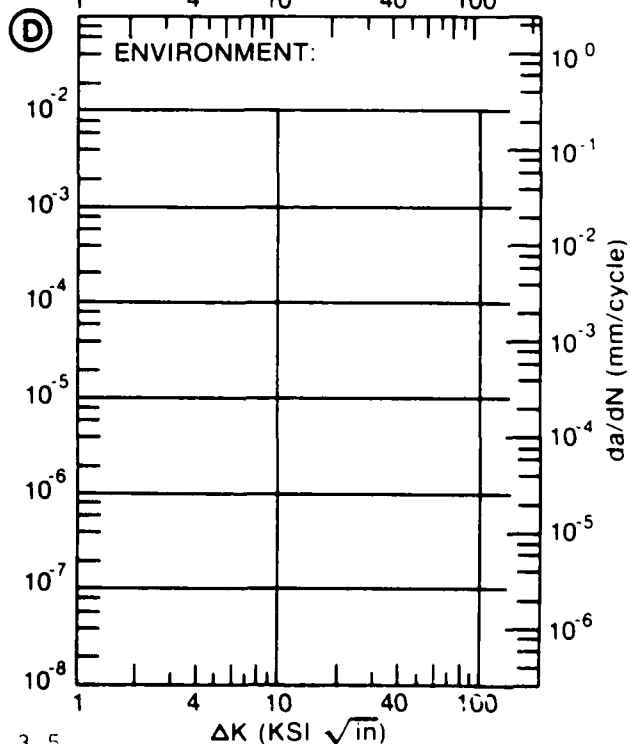
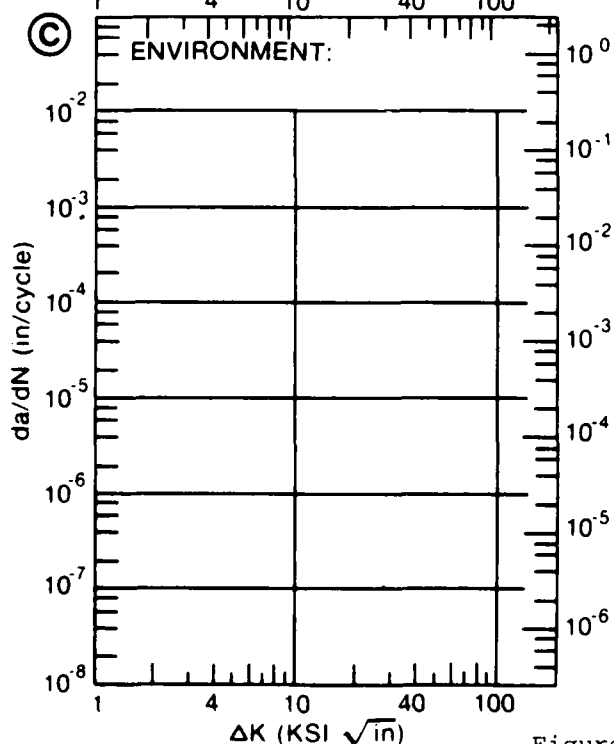
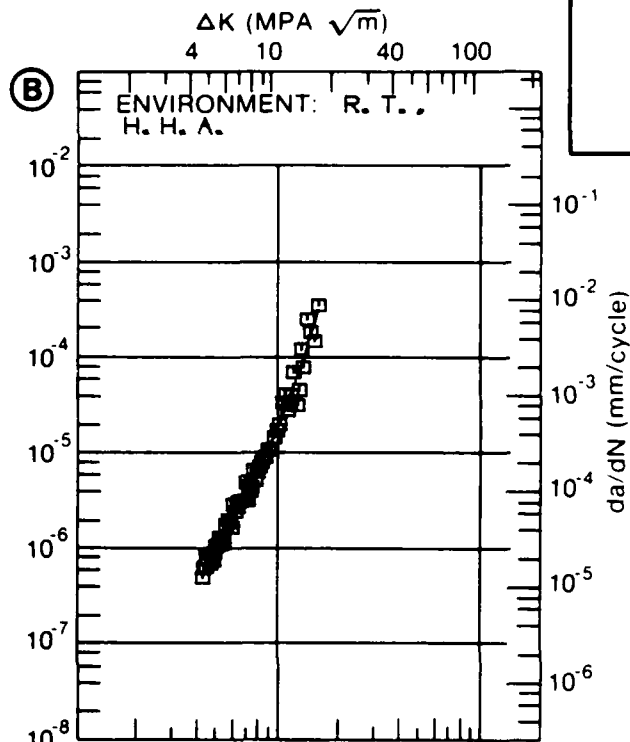
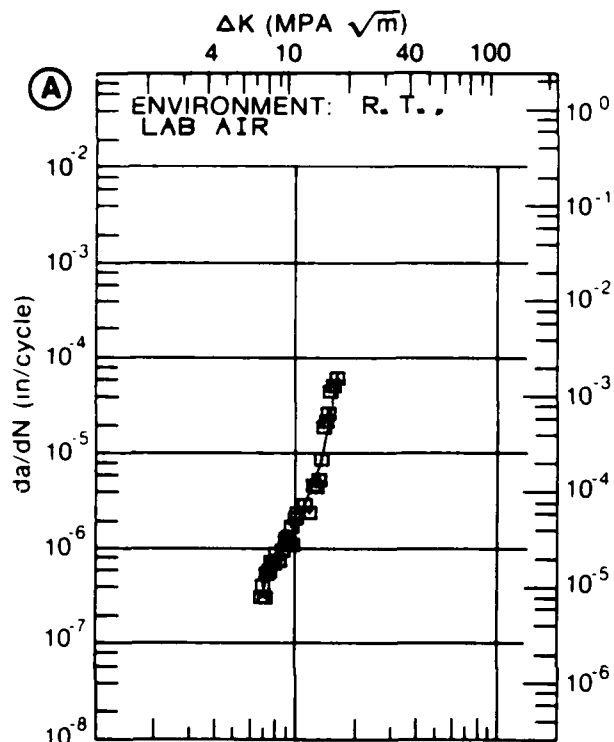


Figure 7.1.3.5

TABLE 7.1.3.6

**FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR**

**DATA ASSOCIATED WITH FIGURE 7.1.3.6 INDICATING EFFECT  
OF STRESS RATIO**

MATERIAL: ALUMINUM 2014  
CONDITION: T6  
ENVIRONMENT: R. T. , H. H. A.

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		R=-1.00			
DELTA K A:	4.85	.662			
DELTA K B:					
MIN C:					
D:					
	5.00	.783			
	6.00	1.88			
	7.00	3.42			
	8.00	5.26			
	9.00	7.31			
	10.00	9.51			
	13.00	17.1			
	16.00	27.3			
	20.00	48.8			
DELTA K A:	21.09	57.2			
DELTA K B:					
MAX C:					
D:					

ROOT MEAN SQUARE 8.35  
PERCENT ERROR

LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25  
SUMMARY 1.25-2.0  
(NP/NA) >2.0

CONDITION/HT: T6  
 FORM: 5.00" TH FORGING  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T  
 FREQUENCY: 9.00 HZ  
 ENVIRONMENT: R. T., H. H. A.

YIELD STRENGTH:  
 ULT. STRENGTH:  
 SPECIMEN THK: 0.400"  
 SPECIMEN WIDTH: 2.000"  
 REFERENCES: BW001

ALUM.  
 ALLOY

2014

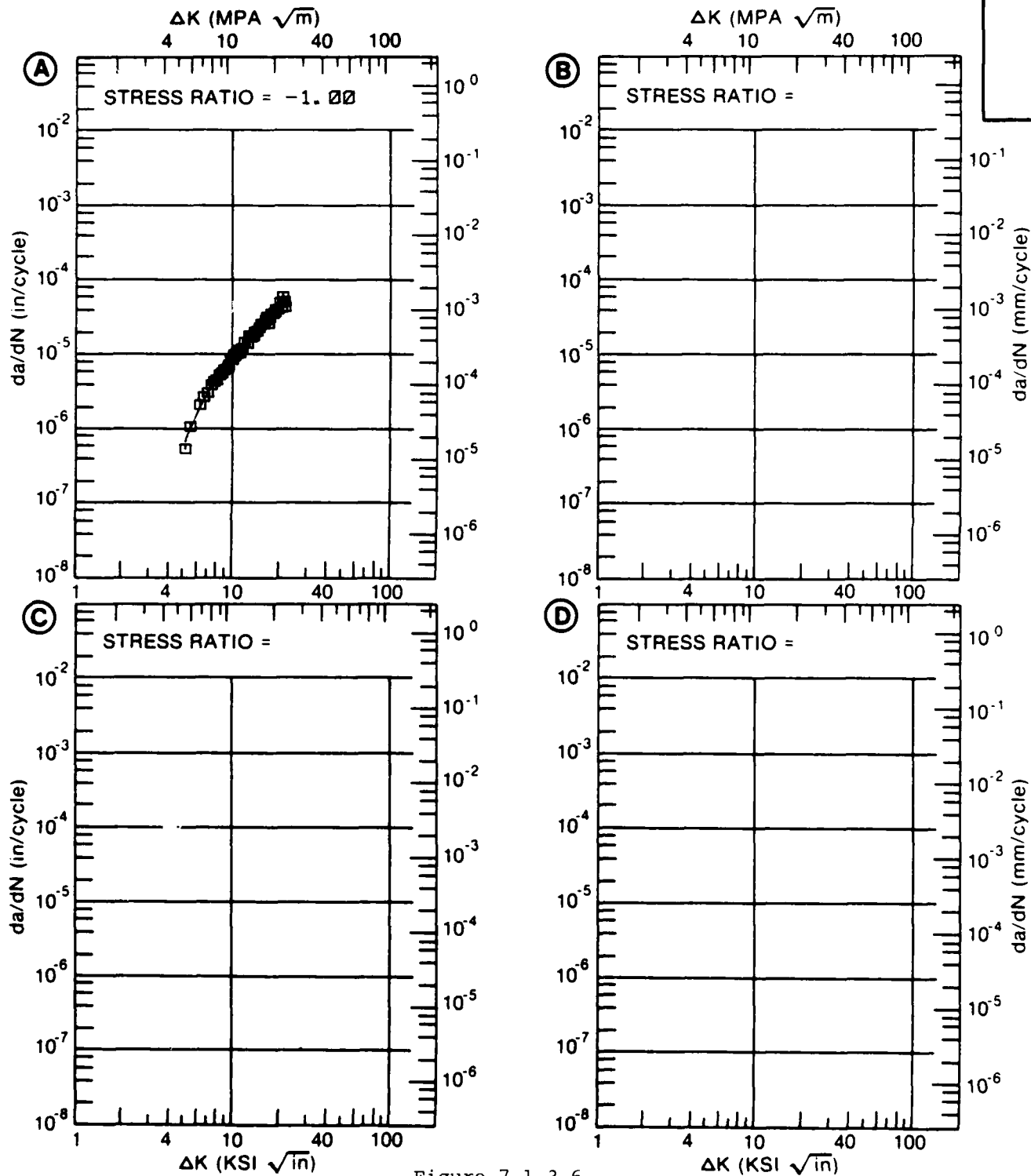


Figure 7.1.3.6

TABLE 7.1.3.7

**FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR**

**DATA ASSOCIATED WITH FIGURE 7.1.3.7 INDICATING EFFECT  
OF STRESS RATIO**

MATERIAL: ALUMINUM		2014			
CONDITION: T6					
ENVIRONMENT: R. T. , H. H. A.					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		R=-1.00			
DELTA K MIN	A: 4.79	1.01			
	B:				
	C:				
	D:				
	5.00	1.26			
	6.00	2.86			
	7.00	5.18			
	8.00	8.23			
DELTA K MAX	9.00	12.1			
	10.00	17.4			
	13.00	58.2			
	16.00	224.			
	A: 17.10	284.			
	B:				
	C:				
	D:				
ROOT MEAN SQUARE		26.13			
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25				
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION/HT: T6  
 FORM: 5.00" TH FORGING  
 SPECIMEN TYPE: CCP  
 ORIENTATION: T-L  
 FREQUENCY: 9.00 HZ  
 ENVIRONMENT: R. T., H. H. A.

YIELD STRENGTH: 64.1 KSI  
 ULT. STRENGTH: 68.2 KSI  
 SPECIMEN THK: 0.400"  
 SPECIMEN WIDTH: 4.000"  
 REFERENCES: BW001

ALUM.  
 ALLOY

2014

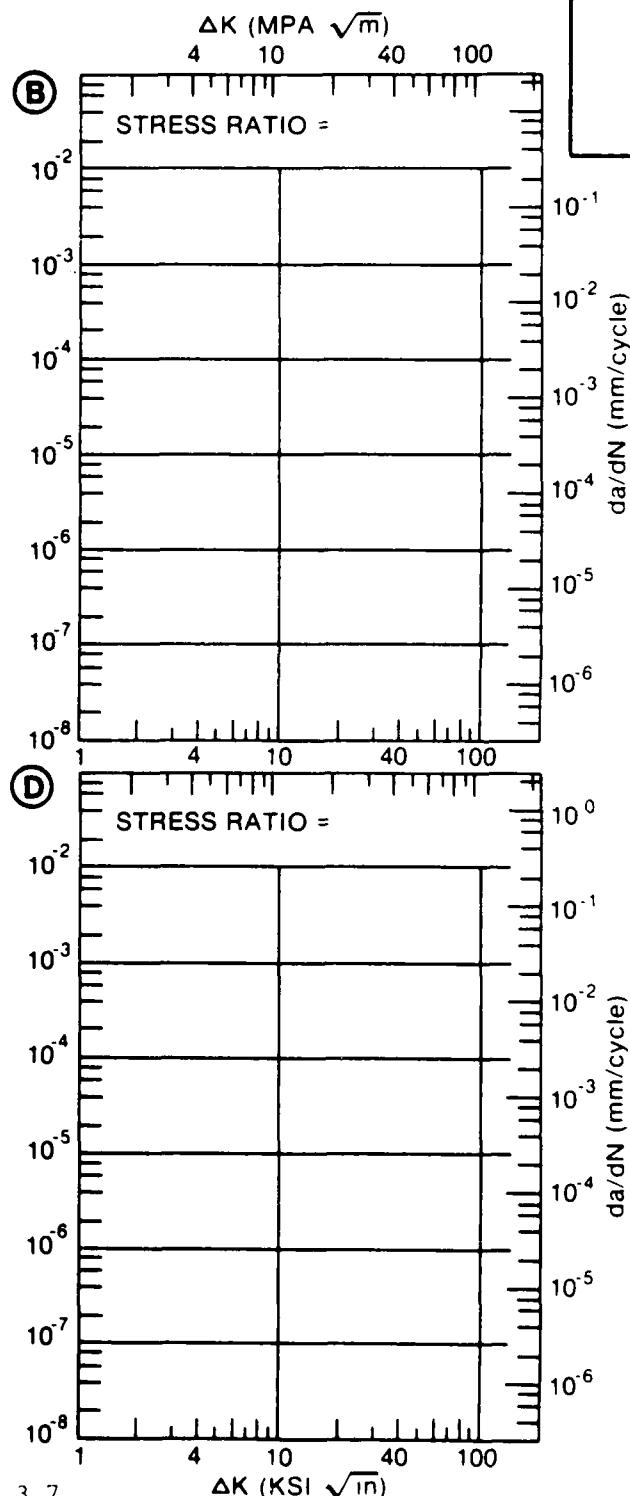
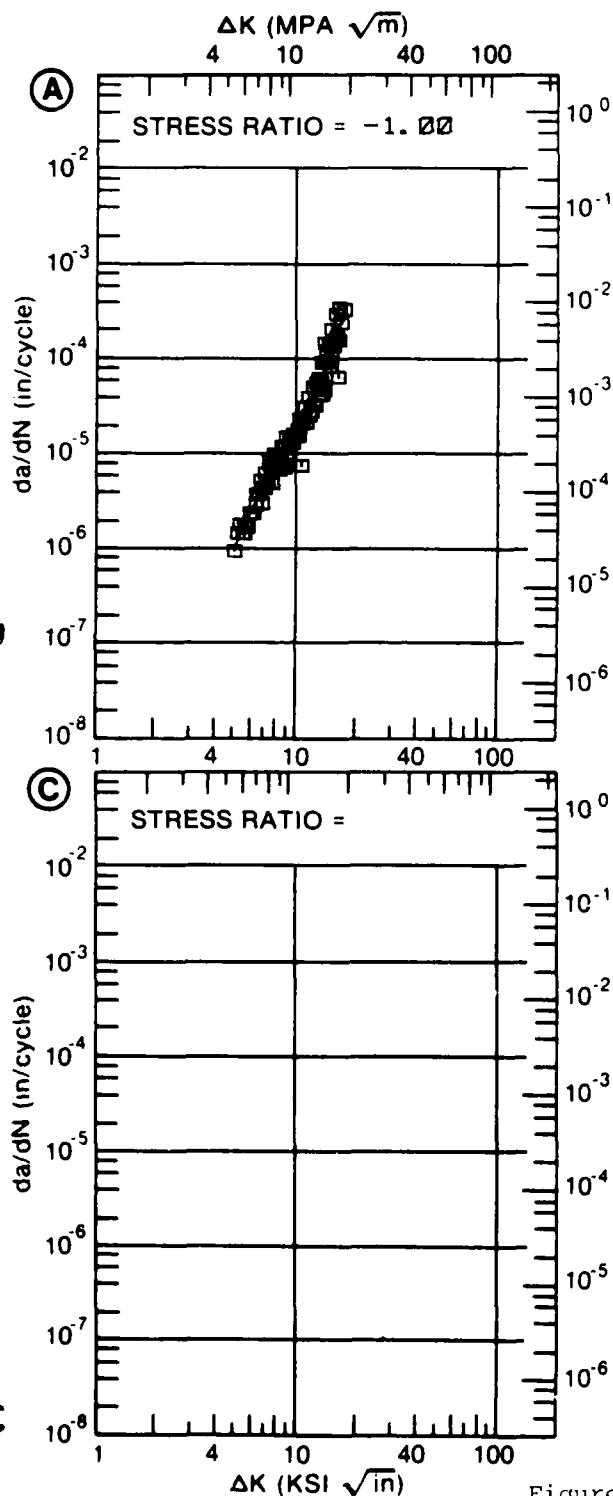


Figure 7.1.3.7

TABLE 7.1.3.8

**FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR**

**DATA ASSOCIATED WITH FIGURE 7.1.3.8 INDICATING EFFECT**

**OF ENVIRONMENT**

**MATERIAL: ALUMINUM                      2014**  
**CONDITION: T6**

**DELTA K  
(KSI\*IN\*\*1/2)**

**DA/DN (10\*\*-6 IN. /CYCLE)**

**A**

**B**

**C**

**D**

**E= R. T.  
LAB AIR**

<b>DELTA K</b>	<b>A:</b>	<b>24.55</b>	<b>:</b>	<b>196.</b>
<b>MIN</b>	<b>B:</b>		<b>:</b>	
	<b>C:</b>		<b>:</b>	
	<b>D:</b>		<b>:</b>	
		<b>25.00</b>	<b>:</b>	<b>236.</b>
		<b>30.00</b>	<b>:</b>	<b>549.</b>
		<b>35.00</b>	<b>:</b>	<b>1271.</b>
		<b>40.00</b>	<b>:</b>	<b>1575.</b>

<b>DELTA K</b>	<b>A:</b>	<b>46.11</b>	<b>:</b>	<b>2655.</b>
<b>MAX</b>	<b>B:</b>		<b>:</b>	
	<b>C:</b>		<b>:</b>	
	<b>D:</b>		<b>:</b>	

**ROOT MEAN SQUARE                      28.37**  
**PERCENT ERROR**

<b>LIFE</b>	<b>0.0-0.3</b>	
<b>PREDICTION</b>	<b>0.5-0.8</b>	
<b>RATIO</b>	<b>0.8-1.25</b>	<b>4</b>
<b>SUMMARY</b>	<b>1.25-2.0</b>	
<b>(NP/NA)</b>	<b>&gt;2.0</b>	

CONDITION/HT: T6  
 FORM: 1.00" TH ROLLED BAR  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T  
 STRESS RATIO: +0.00  
 FREQUENCY: 5.20 HZ

YIELD STRENGTH: 60.2- 60.5 KSI  
 ULT. STRENGTH: 66.0- 67.3 KSI  
 SPECIMEN THK: 0.253- 0.260"  
 SPECIMEN WIDTH: 7.500- 7.517"  
 REFERENCES: 86213

ALUM.  
 ALLOY

2014

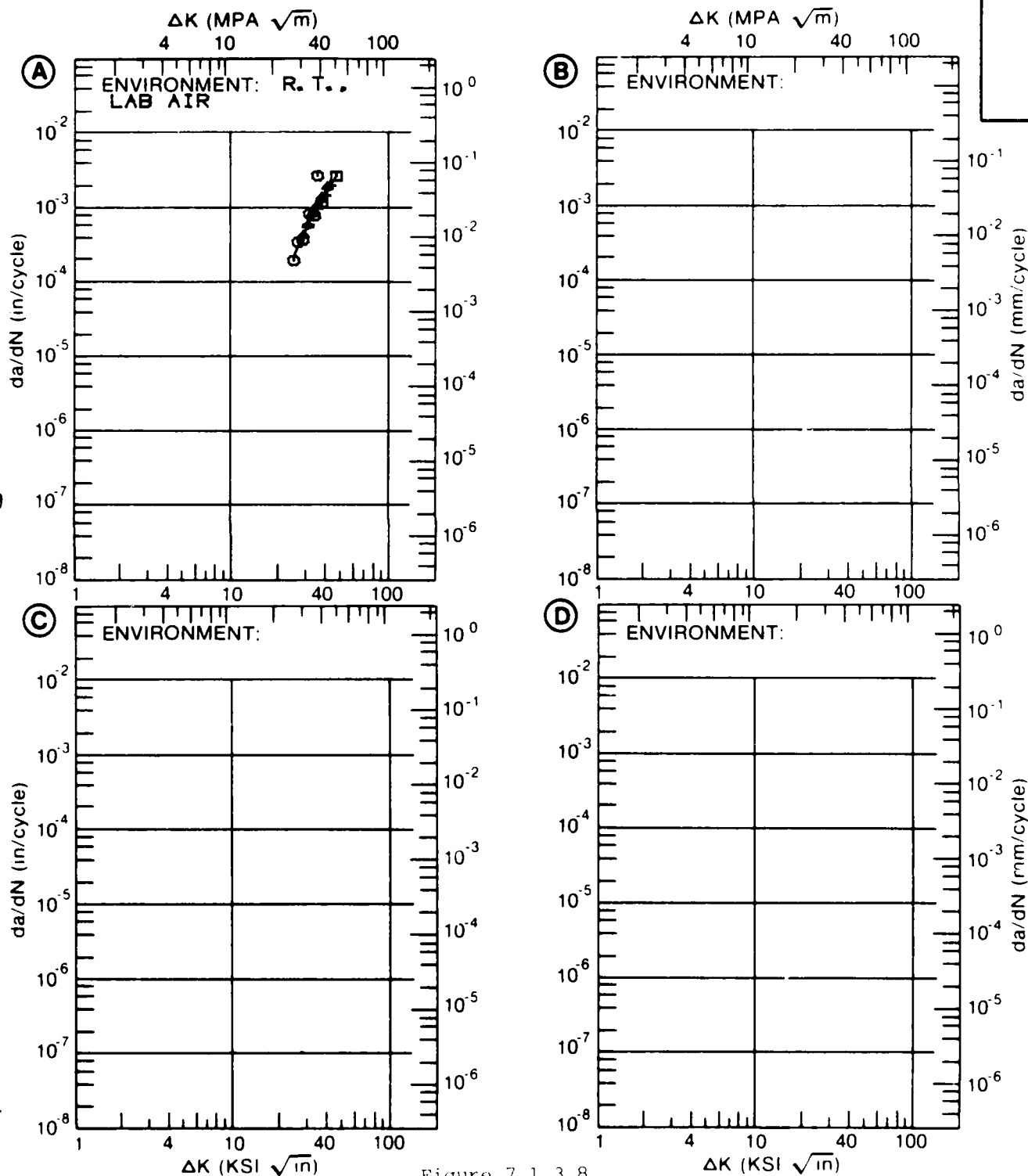


Figure 7.1.3.8

TABLE 7.1.3.10

SUSTAINED CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTORDATA ASSOCIATED WITH FIGURE 7.1.3.10 INDICATING EFFECT  
OF ENVIRONMENTMATERIAL: ALUMINUM  
CONDITION: T451

2014

K MAX  
(KSI\*IN\*\*1/2)

DA/DT (10\*\*-6 IN/HOUR)

A

B

C

D

E= F  
3X/DAY-3.5NACLK MAX A:  
MIN B:  
C:  
D:

200.00

K MAX A:  
MAX B:  
C:  
D:ROOT MEAN SQUARE  
PERCENT ERROR

0.00



CONDITION/HT: T451  
 FORM: 1.5" TH PLATE  
 SPECIMEN TYPE: DCB  
 ORIENTATION: S-L  
 YIELD STRENGTH:  
 ULT. STRENGTH:

SPECIMEN THK: 1.000"  
 SPECIMEN WIDTH: 5.000"  
 CRACK LENGTH ( $A_0$ ):  
 $K_{ISCC}$ :  
 REFERENCES: 78313

ALUM.  
 ALLOY

2014

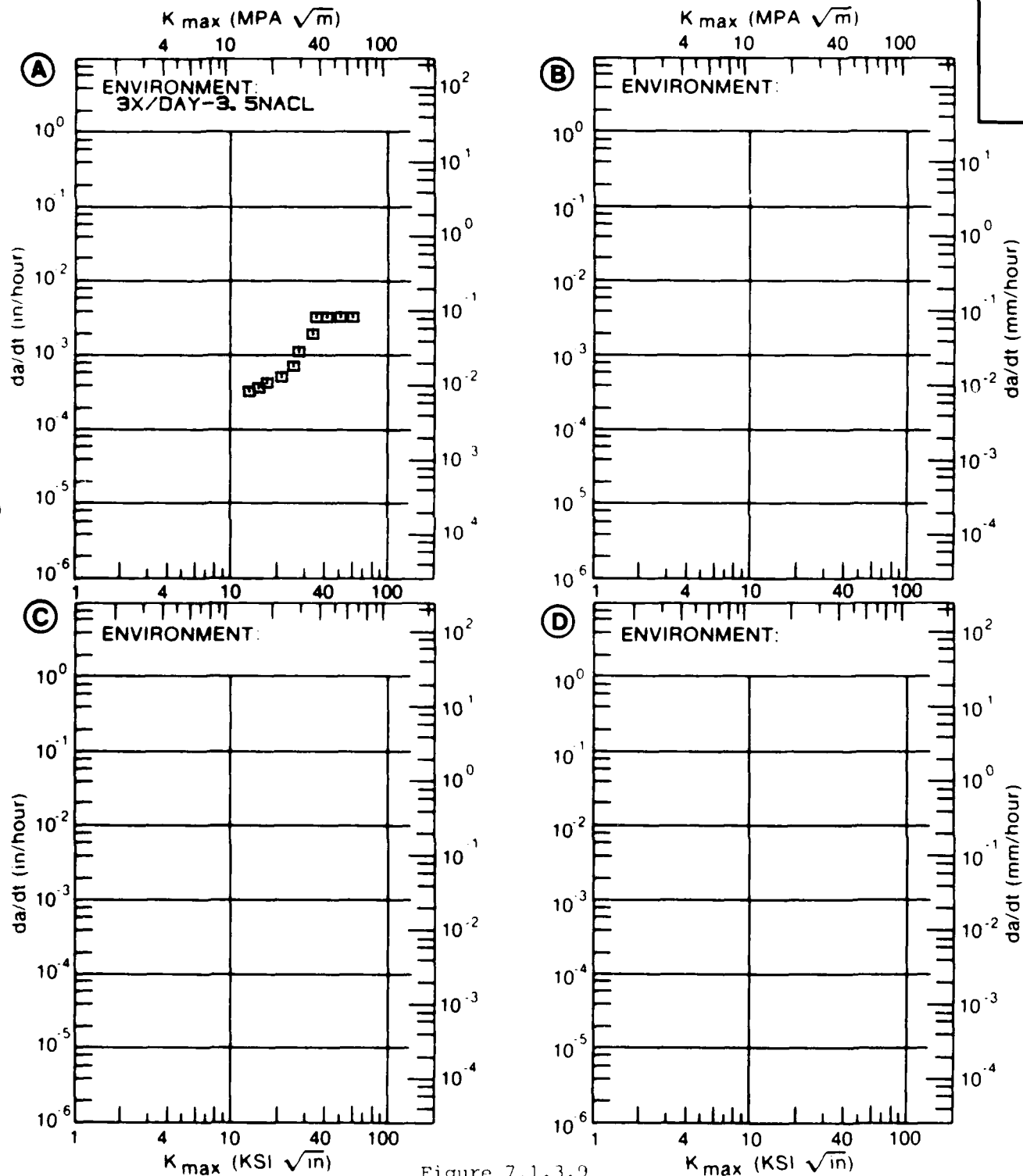


Figure 7.1.3.9

TABLE 7.1.3.9

SUSTAINED CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTORDATA ASSOCIATED WITH FIGURE 7.1.3.9 INDICATING EFFECT  
OF ENVIRONMENT

MATERIAL: ALUMINUM		2014			
CONDITION: T651					
K MAX (KSI*IN**1/2)		DA/DT (10**-6 IN/HOUR)			
		A	B	C	D
		E= F			
		3X/DAY-3.5NACL			
K MAX	A:				
MIN	B:				
	C:				
	D:				
	200.00				
K MAX	A:				
MAX	B:				
	C:				
	D:				
ROOT MEAN SQUARE		0.00			
PERCENT ERROR					

CONDITION/HT: T651  
 FORM: 2.0" TH PLATE  
 SPECIMEN TYPE: DCB  
 ORIENTATION: S-L  
 YIELD STRENGTH:  
 ULT. STRENGTH:

SPECIMEN THK: 1.000"  
 SPECIMEN WIDTH: 5.000"  
 CRACK LENGTH ( $A_0$ ):  
 K<sub>ISCC</sub>:  
 REFERENCES: 78313

ALUM.  
 ALLOY

2014

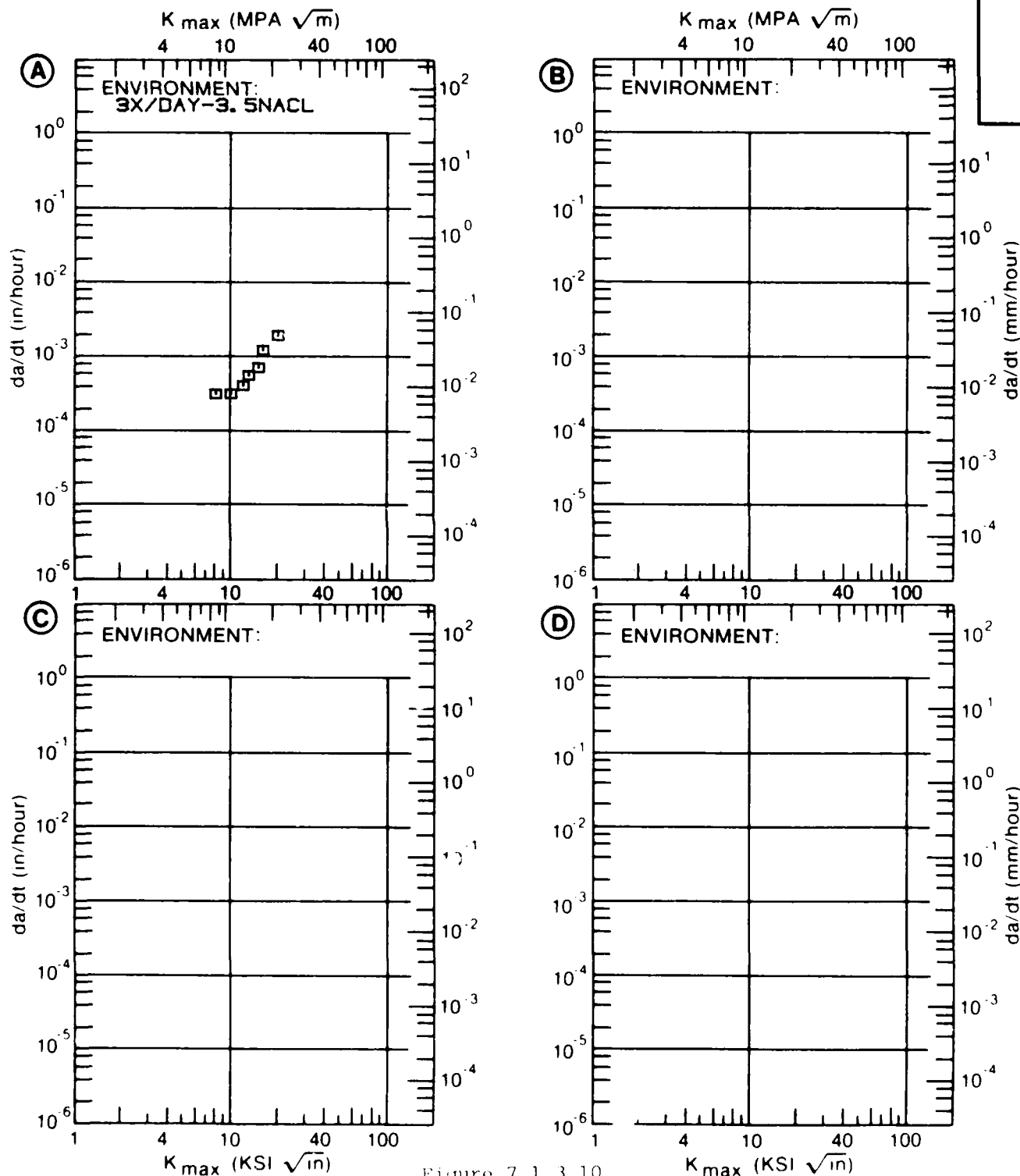


Figure 7.1.3.10



TABLE 7.2.1.1

MEAN PLANE STRAIN FRACTURE TOUGHNESS DATA OF  
ALUMINUM ALLOY 2020 AT ROOM TEMPERATURE

CONDITION/HT	MEAN K <sub>IC</sub> ± STANDARD (KSI SQRT(IN)) DEVIATION		(NUMBER OF SPECIMENS)	
	PLATE			
	I-T	I-L	S-L	
T651	23 0 ± 2 4 (8)	17 2 ± 0 3 (4)	-----	

TABLE 7.2.1.2

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR

ALUMINUM 2024

TEST CONDITIONS

SPECIMEN  
ORIENTATION L-TENVIRONMENT LAB AIR  
AT R.T.

CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQ (HZ)	DELTA K LEVELS (KSI SQRT(IN))	2	5	10	20	50	100
T6	SHEET	0.00	1.5 20							104
T651	PLATE	0.50	5 20							3.22
T651	PLATE	0.60	5 20							3.45

TABLE 7.2.2.1

CONDITION	ALUMINUM				2020				K(1C)				DATE	REFER
	--PRODUCT-- FORM	THICK (IN)	TEST SPECIMEN TEMP ORIENT (F)	YIELD (KSI)	-----SPECIMEN-----				CRACK LENGTH (IN)	2.5* K(1C)/(TVS)**2 (IN)	K(1C) MEAN DEV (KSI*SQRT IN)	K(1C) STAN		
					WIDTH (IN)	THICK (IN)	DESIGN	A						
T6	P	0.78	86	L-T	75.5	1.500	0.751	CT	0.745	0.18	20.50		1973	86213
		0.78			75.5	1.500	0.752	CT	0.728	0.17	19.90		1973	86213
		0.78			75.5	1.500	0.752	CT	0.697	0.18	20.00	20.1/ 0.3	1973	86213
T6	E	0.69	R.T.	L-T	75.5	1.500	0.652	NB	0.747	0.22	22.40		1973	86213
T651	P	1.37	R.T.	L-T	76.3	3.000	1.376	NB	1.413	0.17	19.70		1973	86213
		1.37			77.0	3.000	1.355	NB	1.390	0.18	20.90		1973	86213
		1.37			77.5	3.000	1.375	NB	1.460	0.24	23.80		1973	86213
		1.37			77.5	2.000	0.999	CT	0.967	0.22	22.90		1973	86213
		1.37			77.5	3.000	1.375	NB	1.400	0.31	27.20		1973	86213
		1.37			77.5	3.000	1.375	NB	1.450	0.23	23.60		1973	86213
		1.37			77.5	3.000	1.375	NB	1.420	0.26	24.80		1973	86213
		1.37			77.5	2.000	0.999	CT	1.007	0.19	21.10	23.0/ 2.4	1973	86213
T651	P	1.37	84	L-T	76.3	2.000	1.000	CT	0.963	0.18	20.30		1973	86213
		1.37			76.3	2.000	1.000	CT	0.943	0.22	22.80		1973	86213
		1.37			76.3	2.000	1.001	CT	0.950	0.18	20.50	21.2/ 1.4	1973	86213
T651	P	1.37	R.T.	T-L	77.4	3.000	1.379	NB	1.526	0.12	17.00		1973	86213
		1.37			77.5	3.000	1.378	NB	1.560	0.12	16.80		1973	86213
		1.37			78.4	2.000	0.999	CT	1.024	0.12	17.50		1973	86213
		1.37			78.4	1.990	0.999	CT	0.964	0.12	17.40	17.2/ 0.3	1973	86213
T651	P	1.37	84	T-L	77.4	2.000	1.002	CT	1.019	0.12	17.00		1973	86213
		1.37			77.4	2.000	1.002	CT	1.020	0.13	17.80		1973	86213
		1.37			77.4	2.000	1.001	CT	1.021	0.12	17.10	17.3/ 0.4	1973	86213
T651	P	1.37	88	S-L	74.4	0.990	0.500	CT	0.506	0.11	15.30		1973	86213
		1.37			74.4	1.000	0.500	CT	0.508	0.11	15.50	15.4/ 0.1	1973	86213

TABLE 7.2.2.2

CONDITION	ALUMINUM		2020		K(C)											
	--PRODUCT--		TEST SPEC		YIELD		---SPECIMEN---		CRACK LENGTH		GROSS STRESS		K(APP)		STAN	
	FORM		THICK TEMP		OR		W		INIT		MAX		K(C)		K(C)	
	THICK	(IN)	(F)	(KSI)	STR	(KSI)	WIDTH	THICK	(IN)	FINAL	ONSET	(KSI)	MEAN	DEV	MEAN	DEV
									2A(F)	2A(F)	S(O)	S(MAX)	(KSI*SQRT IN)	(KSI*SQRT IN)	(KSI*SQRT IN)	(KSI*SQRT IN)
BUCKLING OF CRACK EDGES NOT RESTRAINED																
T6	S	0 06	R T	L-T	75.9	2.000	0.062	0.622	0.890	---	30.80	32.40	41.62	---	---	1973 86213
		0 06			75.9	2.000	0.062	0.622	0.760	---	29.60	31.14	35.36	---	---	1973 86213
		0 06			75.9	2.000	0.062	0.621	0.890	---	30.40	31.91	41.08	---	---	1973 86213
		0 06			77.0	2.000	0.064	0.625	0.650	---	24.40	25.72	26.39	---	---	1973 86213
		0 06			77.0	2.000	0.064	0.625	0.680	---	25.50	26.88	28.41	34.6/ 7.0	34.6/ 7.0	1973 86213
T6	S	0 06	R T	L-T	75.9	3.000	0.061	1.070	1.140	---	21.10	29.72	31.05	---	---	1973 86213
		0 06			75.9	3.000	0.062	1.100	1.140	---	19.90	28.56	29.28	30.2/ 1.3	30.2/ 1.3	1973 86213
T6	S	0 06	R T	L-T	76.9	15.800	0.063	3.000	3.480	---	17.00	37.75	40.98	---	---	1973 86213
		0 06			76.9	15.810	0.063	6.010	6.010	---	10.20	34.46	34.46	---	---	1973 86213
		0 06			76.9	15.810	0.063	3.020	3.020	---	16.60	36.99	36.99	---	---	1973 86213
		0 06			76.9	15.820	0.063	1.020	1.020	---	27.80	35.28	36.9/ 1.5	36.9/ 1.5	36.9/ 1.5	1973 86213
T6	S	0 06	R T	T-L	75.8	2.000	0.062	0.622	0.870	---	26.60	27.98	35.31	---	---	1973 86213
		0 06			75.8	2.000	0.062	0.622	0.880	---	27.20	28.61	36.43	---	---	1973 86213
		0 06			75.8	2.000	0.062	0.624	0.870	---	25.60	26.98	33.98	---	---	1973 86213
		0 06			76.0	2.000	0.064	0.625	0.660	---	21.70	22.87	23.71	---	---	1973 86213
		0 06			76.0	2.000	0.064	0.625	0.625	---	21.70	22.87	22.87	30.5/ 6.6	30.5/ 6.6	1973 86213
T6	S	0 06	R T	T-L	75.8	3.000	0.061	1.190	1.240	---	17.40	26.40	27.21	---	---	1973 86213
		0 06			75.8	3.000	0.062	1.070	1.120	---	19.50	27.47	28.34	27.8/ 0.8	27.8/ 0.8	1973 86213
T6	S	0 06	R T	T-L	75.6	15.810	0.063	6.000	6.000	---	9.30	31.39	31.39	---	---	1973 86213
		0 06			75.6	15.810	0.063	3.010	3.010	---	16.10	35.81	35.81	---	---	1973 86213
		0 06			75.6	15.820	0.063	1.020	1.020	---	28.00	35.53	35.53	---	---	1973 86213
		0 06			75.6	15.820	0.063	4.010	4.010	---	13.80	36.07	36.07	---	---	1973 86213
		0 06			75.6	15.820	0.063	6.000	6.000	---	10.00	33.74	34.5/ 2.0	34.5/ 2.0	34.5/ 2.0	1973 86213
BUCKLING OF CRACK EDGES NOT RESTRAINED																
T651	S	0 12	R T	L-T	76.1	3.000	0.127	1.060	1.310	---	25.50	35.69	41.58	---	---	1973 86213
		0 12			76.1	3.000	0.127	1.080	1.300	---	25.80	36.37	41.82	---	---	1973 86213
		0 12			76.1	3.000	0.127	1.070	1.400	---	27.30	38.45	46.96	---	---	1973 86213



TABLE 7.2.2.2 (Con't)

CONDITION	ALUMINUM			2020		K(C)									
	--PRODUCT-- FORM	THICK (IN)	TEST SPEC TEMP OR (F)	CRACK LENGTH		CROSS STRESS									
				W	B	INIT (IN)	FINAL (IN)	ONSET (KSI)	MAX (KSI)	K(APP) (KSI*SQRT IN)	K(C) (KSI*SQRT IN)	STAN DEV (IN)	STAN DEV (IN)		
					2A(D)	2A(F)	S(D)	S(MAX)							
T651	S	0.12	R. T.	L-T	76.1	3.000	0.127	1.060	1.270	---	25.80	36.11	41.08	1973	86213
		0.12			76.3	3.000	0.127	1.100	1.400	---	25.20	36.17	43.35	1973	86213
		0.12			76.3	3.000	0.127	1.070	1.260	---	24.20	34.09	38.30	1973	86213
		0.12			76.3	3.000	0.127	1.090	1.320	---	23.00	32.81	37.73	1973	86213
		0.12			76.3	3.000	0.127	1.060	1.320	---	27.40	38.35	44.95	1973	86213
		0.12			77.5	3.000	0.127	1.070	1.390	---	23.90	33.66	40.87	1973	86213
T651	P	0.12			77.5	3.000	0.127	1.060	1.270	---	24.30	34.01	38.69	1973	86213
		0.12			77.5	3.000	0.127	1.080	1.380	---	24.00	34.02	40.80	1973	86213
		0.12			77.5	3.000	0.127	1.070	1.360	---	23.80	33.52	39.98	1973	86213
		0.25	R. T.	L-T	77.4	3.000	0.256	1.200	1.490	---	14.50	22.13	26.31	1973	86213
		0.25			77.4	3.000	0.256	1.170	1.420	---	15.00	22.48	26.11	1973	86213
		0.25			77.4	3.000	0.255	1.000	1.310	---	16.40	22.09	26.74	1973	86213
T651	P	0.25	R. T.	L-T	77.4	4.000	0.256	1.330	1.700	---	14.60	22.67	26.92	1973	86213
		0.25			77.4	4.000	0.256	1.330	1.330	---	14.70	22.82	22.82	1973	86213
		0.25			77.4	4.000	0.256	1.480	1.660	---	12.70	21.18	23.00	1973	86213
		1.00	R. T.	L-T	76.1	20.000	1.000	7.000	8.600	---	7.60	27.29	31.62	1973	86213
		1.00			76.1	20.000	1.000	7.000	10.090	---	7.00	25.14	33.14	1973	86213
		1.00			76.1	20.000	1.000	7.000	9.040	---	7.50	26.93	32.45	1973	86213
T651	P	1.00			76.1	20.000	1.000	7.000	9.080	---	7.50	26.93	32.57	1973	86213
		1.00			76.3	20.000	1.000	7.000	7.600	---	7.50	26.93	28.49	1973	86213
		1.00			76.3	20.000	1.000	7.000	8.890	---	7.60	27.29	32.33	1973	86213
		1.00			76.3	20.000	1.000	7.000	8.900	---	7.50	26.93	30.92	1973	86213
		1.00			76.3	20.000	1.000	7.000	8.400	---	7.60	27.29	31.06	1973	86213
		1.00			77.5	20.000	1.000	7.000	8.450	---	6.90	24.78	28.32	1973	86213
T651	S	1.00			77.5	20.000	1.000	7.000	8.500	---	7.30	26.21	30.10	1973	86213
		1.00			77.5	20.000	1.000	7.000	7.910	---	6.30	22.62	24.63	1973	86213
		0.12	R. T.	T-L	77.4	3.000	0.127	1.100	1.280	---	14.50	20.81	23.23	1973	86213
		0.12			77.4	3.000	0.126	1.090	1.280	---	15.70	22.39	25.15	1973	86213
		0.12			77.4	3.000	0.126	1.100	1.140	---	15.90	22.82	23.40	1973	86213
		0.12			77.4	3.000	0.128	1.100	1.280	---	14.80	21.24	23.71	1973	86213
T651	P	0.12			77.5	3.000	0.127	1.080	1.180	---	15.70	22.25	23.67	1973	86213
		0.12			77.5	3.000	0.127	1.080	1.350	---	17.10	24.24	28.56	1973	86213

TABLE 7.2.2.2 (Con't)

CONDITION	ALUMINUM		2020		K(C)												
	---PRODUCT---		CRACK LENGTH		CROSS STRESS												
	FORM	THICK TEMP OR	THICK	INIT	FINAL	ONSET											
	(IN)	(F)	(IN)	(IN)	(IN)	(KSI)											
T651	S	0.12	R.T.	T-L	77.5	3.000	0.127	1.090	1.170	---	17.00	24.25	25.48	1973	86213		
		0.12			77.5	3.000	0.126	1.080	1.110	---	15.90	22.54	22.97	1973	86213		
		0.12			78.4	3.000	0.127	1.070	1.150	---	14.60	20.57	21.62	1973	86213		
		0.12			78.4	3.000	0.127	1.090	1.090	---	14.60	20.83	20.83	1973	86213		
		0.12			78.4	3.000	0.127	1.080	1.320	---	14.90	21.12	24.44	1973	86213		
T651	P	0.25	R.T.	T-L	78.0	3.000	0.127	1.090	1.100	---	13.30	18.97	21.8/ 1.5	19.09	23.5/ 2.4	1973	86213
		0.25			78.0	3.000	0.256	1.120	1.140	---	10.70	15.55	15.74	1973	86213		
		0.25			78.0	3.000	0.256	1.000	1.000	---	15.00	20.20	20.20	1973	86213		
		0.25			78.0	3.000	0.256	1.140	1.140	---	10.70	15.74	17.2/ 2.6	15.74	17.2/ 2.6	1973	86213
		0.25	R.T.	T-L	78.0	4.000	0.256	1.330	1.330	---	13.50	20.96	20.96	1973	86213		
T651	P	0.25	R.T.	T-L	78.0	4.000	0.257	1.330	1.330	---	13.40	20.80	20.9/ 0.1	20.80	20.9/ 0.1	1973	86213
		1.00	R.T.	T-L	77.4	20.000	1.000	7.000	7.000	---	5.40	19.39	19.39	1973	86213		
		1.00			77.4	20.000	1.000	7.000	7.000	---	5.60	20.11	20.11	1973	86213		
		1.00			77.4	20.000	1.000	7.000	7.000	---	5.90	21.19	21.19	1973	86213		
		1.00			77.5	20.000	1.000	7.000	7.000	---	5.60	20.11	20.11	1973	86213		
T651	P	1.00	R.T.	T-L	77.5	20.000	1.000	7.000	7.000	---	5.40	19.39	19.39	1973	86213		
		1.00			77.5	20.000	1.000	7.000	7.000	---	5.40	19.39	19.39	1973	86213		
		1.00			77.5	20.000	1.000	7.000	7.000	---	5.40	19.39	19.39	1973	86213		
		1.00			77.5	20.000	1.000	7.000	7.000	---	5.40	19.39	19.39	1973	86213		
		1.00			77.5	20.000	1.000	7.000	7.000	---	5.40	19.39	19.39	1973	86213		
T651	P	1.00	R.T.	T-L	78.4	20.000	1.000	7.000	7.000	---	5.20	18.67	18.67	1973	86213		
		1.00			78.4	20.000	1.000	7.000	7.000	---	5.30	19.03	19.03	1973	86213		
		1.00			78.4	20.000	1.000	7.000	7.000	---	5.10	18.31	18.31	1973	86213		
		1.00			78.4	20.000	1.000	7.000	7.000	---	5.10	18.31	19.4/ 0.8	18.31	19.4/ 0.8	1973	86213
		1.00			78.4	20.000	1.000	7.000	7.000	---	5.10	18.31	18.31	1973	86213		

TABLE 7.2.3.1

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.2.3.1 INDICATING EFFECT

OF ENVIRONMENT

MATERIAL: ALUMINUM 2020  
CONDITION: T6

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R. T. LAB AIR			
DELTA K MIN	A:	16.10	29.5		
	B:				
	C:				
	D:				
		20.00	104.		
DELTA K MAX	A:	24.15	415.		
	B:				
	C:				
	D:				

ROOT MEAN SQUARE 27.51  
PERCENT ERROR

LIFE	0.0-0.5	
PREDICTION	0.5-0.8	2
RATIO	0.8-1.25	2
SUMMARY	1.25-2.0	
(NP/NA)	>2.0	

CONDITION/HT: T6  
 FORM: 0.13" TH SHEET  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T  
 STRESS RATIO: +0.00  
 FREQUENCY: 13.30

YIELD STRENGTH: 78.4 KSI  
 ULT. STRENGTH: 84.7 KSI  
 SPECIMEN THK: 0.125- 0.126"  
 SPECIMEN WIDTH: 4.000"  
 REFERENCES: 86213

ALUM.  
ALLOY

2020

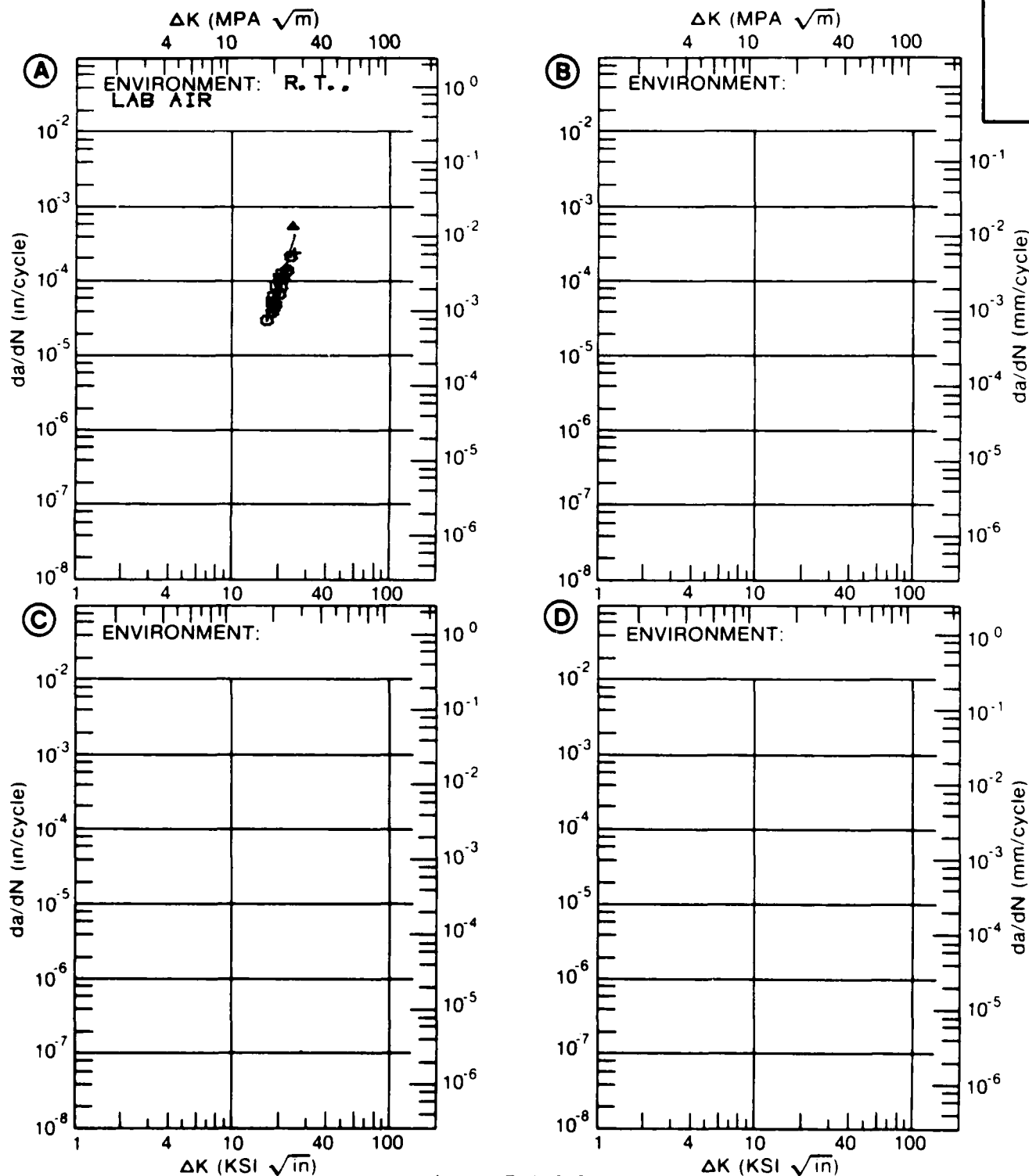


Figure 7.2.3.1

TABLE 7.2.3.2

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.2.3.2 INDICATING EFFECT  
OF ENVIRONMENT

MATERIAL: ALUMINUM		2020			
CONDITION: T651					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R. T. H. H. A.	E= R. T. H. H. A. - 25H2		
DELTA K MIN	A:	3.15	.0956		
	B:	3.72		.157	
	C:				
	D:				
		3.50	.205		
		4.00	.352	.203	
		5.00		.396	
		6.00		.704	
		7.00		1.25	
		8.00		2.12	
DELTA K MAX	A:	4.98	.574		
	B:	15.96		29.4	
	C:				
	D:				
ROOT MEAN SQUARE		17.57	12.36		
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8	1			
RATIO	0.8-1.25		1		
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION/HT: T651  
 FORM: 1.28" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 STRESS RATIO: +0.33  
 FREQUENCY:

YIELD STRENGTH:  
 ULT. STRENGTH:  
 SPECIMEN THK: 0.248- 0.250"  
 SPECIMEN WIDTH: 2.500- 2.501"  
 REFERENCES: AL002

ALUM.  
 ALLOY

2020

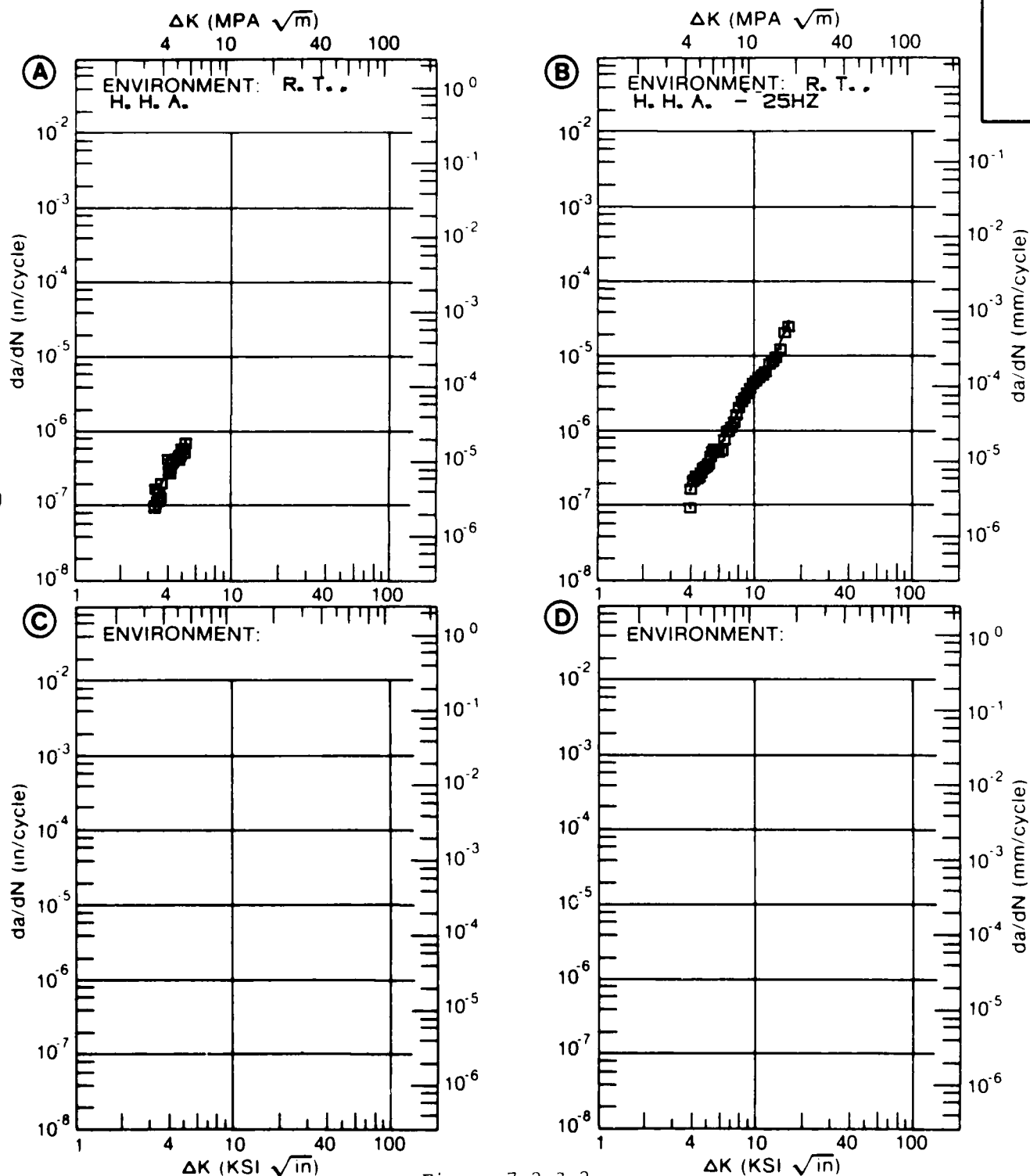


Figure 7.2.3.2

TABLE 7.2.3.3

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.2.3.3 INDICATING EFFECT

## OF ENVIRONMENT

MATERIAL: ALUMINUM  
CONDITION: T651

2020

DELTA K  
(KSI\*IN\*\*1/2)

DA/DN (10\*\*-6 IN./CYCLE)

A

B

C

D

E= R. T.

H. H. A.

DELTA K	A:	2.68	.027
MIN	B:	0	
	C:		
	D:		
		3.00	.0598
		3.50	.147
		4.00	.282
		5.00	.706
		6.00	1.42
		7.00	2.67
		8.00	4.99
		9.00	9.49
		10.00	18.5

DELTA K	A:	11.13	40.8
MAX	B:		
	C:		
	D:		

ROOT MEAN SQUARE  
PERCENT ERROR

43.54

LIFE	0.0-0.5	
PREDICTION	0.5-0.8	1
RATIO	0.8-1.25	
SUMMARY	1.25-2.0	
(NP/NA)	>2.0	

CONDITION/HT: T6S1  
 FORM: 1.28" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: T-L  
 STRESS RATIO: +0.33  
 FREQUENCY: 25.00 HZ

YIELD STRENGTH:  
 ULT. STRENGTH:  
 SPECIMEN THK: 0.248"  
 SPECIMEN WIDTH: 2.500"  
 REFERENCES: AL002

ALUM.  
 ALLOY

2020

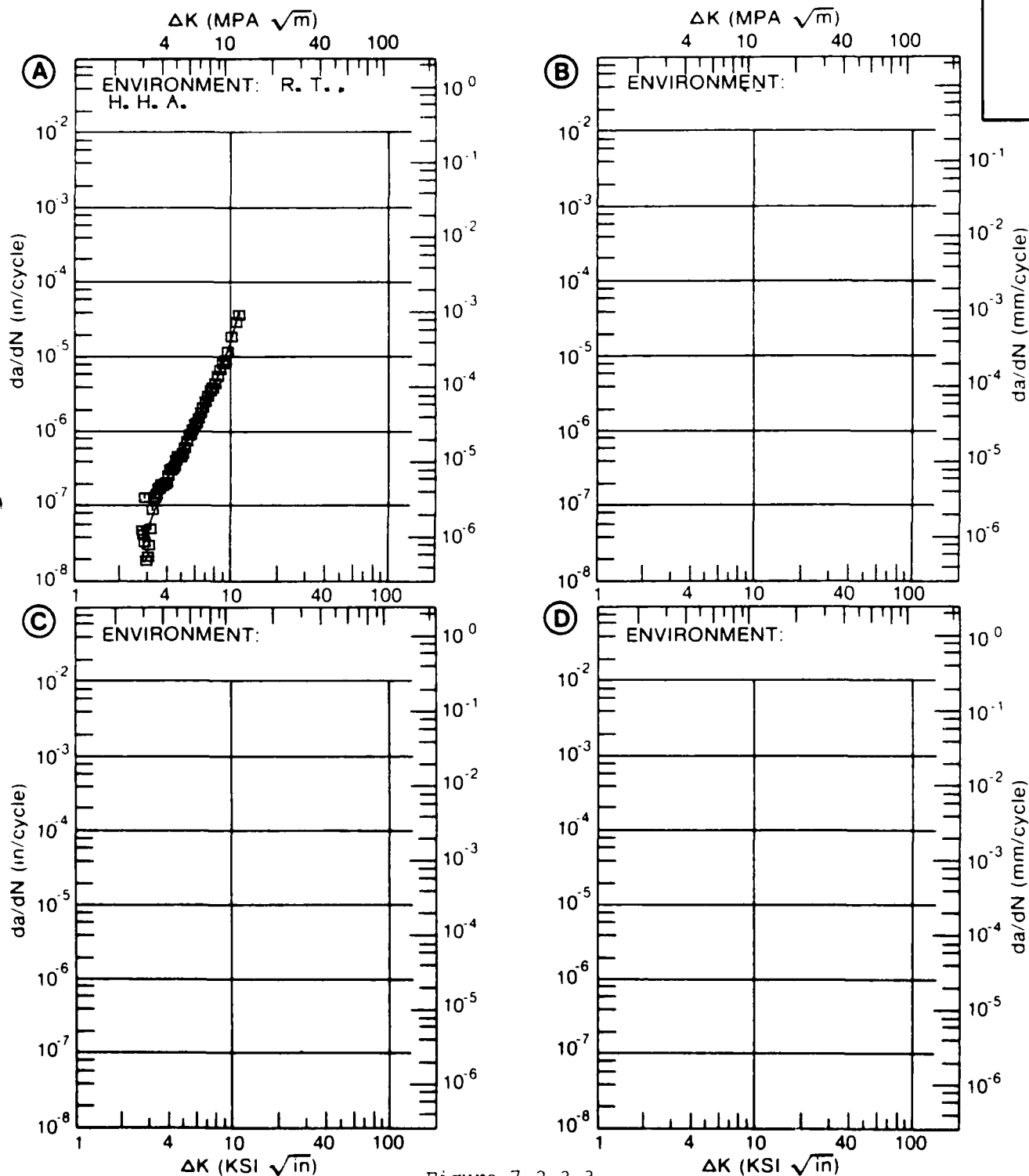


Figure 7.2.3.3



TABLE 7.2.3.4

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.2.3.4 INDICATING EFFECT

## OF STRESS RATIO

MATERIAL: ALUMINUM 2020  
 CONDITION: T651  
 ENVIRONMENT: R.T., LAB AIR

DELTA K  
 (KSI\*IN\*\*1/2)

DA/DN (10\*\*-6 IN./CYCLE)

A

B

C

D

R=-0.50

R=+0.00

DELTA K A: 5.76 :  
 B: 5.25 :  
 MIN C:  
 D:

.549

.0908

6.00 :

.580

.254

7.00 :

.840

.672

8.00 :

1.35

1.35

9.00 :

2.16

2.28

10.00 :

3.33

3.45

13.00 :

9.63

8.55

16.00 :

21.1

17.4

DELTA K A: 18.95 :  
 B: 16.95 :  
 MAX C:  
 D:

64.6

21.5

ROOT MEAN SQUARE  
 PERCENT ERROR

36.60

32.02

LIFE 0.0-0.5  
 PREDICTION 0.5-0.8  
 RATIO 0.8-1.25  
 SUMMARY 1.25-2.0  
 (NP/NA) >2.0

1

1

2

3

1

1

CONDITION/HT: T651  
 FORM: 1.38" TH PLATE  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T  
 FREQUENCY: 5.20  
 ENVIRONMENT: R.T., LAB AIR

YIELD STRENGTH: 76.2 KSI  
 ULT. STRENGTH: 81.7 KSI  
 SPECIMEN THK: 0.748- 0.754"  
 SPECIMEN WIDTH: 2.997- 3.003"  
 REFERENCES: 86213

ALUM.  
 ALLOY

2020

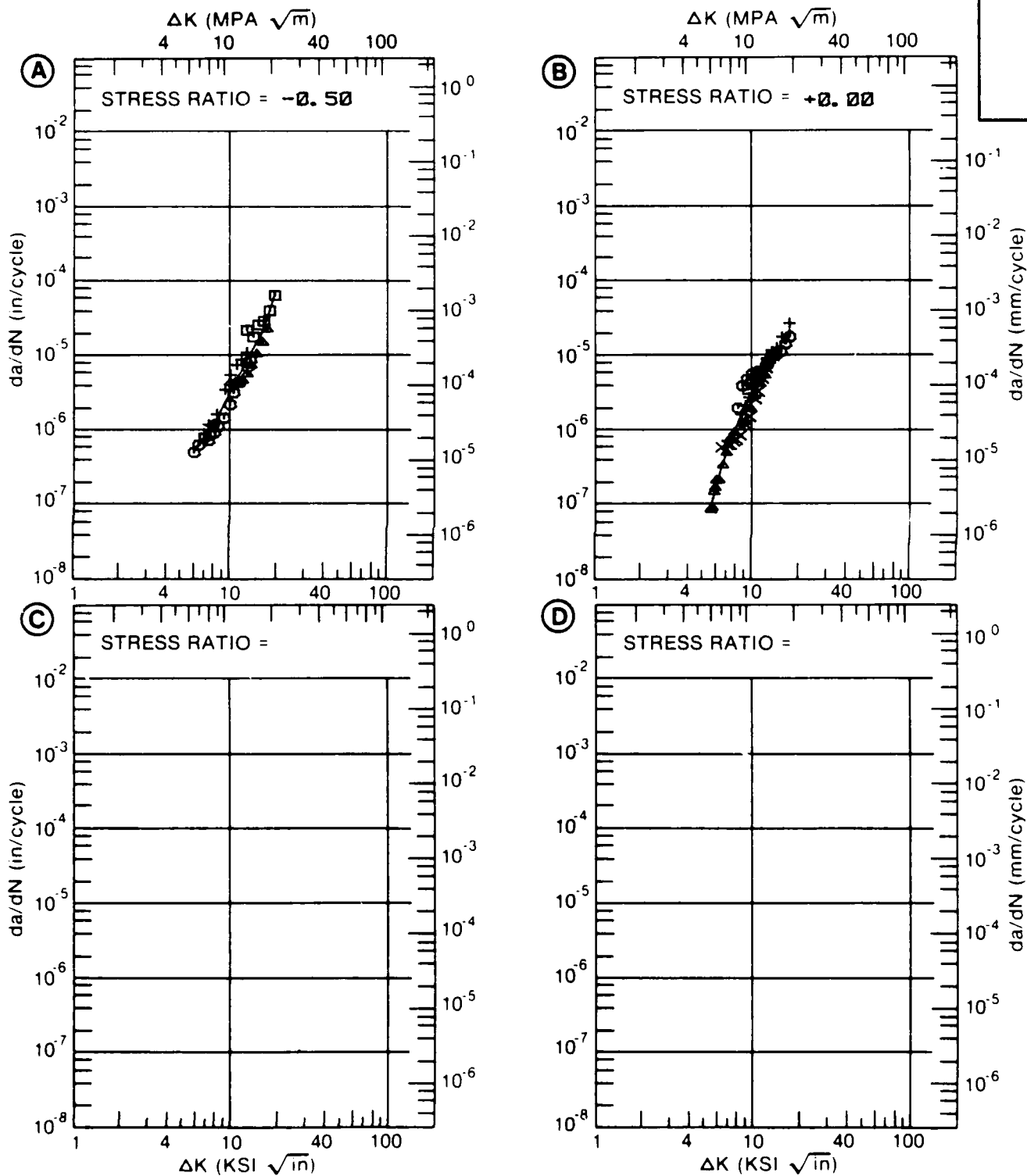


Figure 7.2.3.4



TABLE 7.3.2.1

CONDITION		ALUMINUM		2020 (ALCLAD)										K(C)					
		---PRODUCT--- FORM THICK TEMP OR (IN) (F)		TEST SPEC YIELD STR (KSI)		---SPECIMEN--- WIDTH THICK (IN) (IN)		CRACK LENGTH CROSS STRESS						K(APP) STAN K(APP) MEAN DEV (KSI+SGRT IN)		K(C) STAN K(C) MEAN DEV (KSI+SGRT IN)		REFER	
								BUCKLING OF CRACK EDGES NOT RESTRAINED											
T6		S	0.06	R. T.	L-T	68.0	15.800	0.062	4.000	4.130	---	13.30	34.72	---	35.38	---	1973	86213	
			0.06			68.0	15.800	0.062	3.990	---	---	14.10	36.76	---	---	---	1973	86213	
			0.06			68.0	15.800	0.063	3.990	4.090	---	12.40	32.32	34.6/ 2.2	32.80	34.1/ 1.8	1973	86213	
T6		S	0.12	R. T.	L-T	68.6	2.970	0.123	0.990	1.570	---	24.00	32.16	---	45.89	---	1973	86213	
			0.12			68.6	2.970	0.123	0.985	1.550	---	23.10	30.83	---	43.63	---	1973	86213	
			0.12			68.6	2.980	0.122	0.988	1.350	---	23.10	30.90	---	38.65	---	1973	86213	
			0.12			68.6	3.000	0.122	1.100	1.410	---	22.50	32.30	---	38.94	---	1973	86213	
			0.12			68.6	3.000	0.122	1.290	1.610	---	20.20	32.55	---	39.39	---	1973	86213	
			0.12			68.6	3.000	0.123	1.000	1.260	---	24.50	33.00	---	38.78	---	1973	86213	
			0.12			68.6	3.000	0.123	1.000	1.250	---	23.00	30.98	31.8/ 0.9	36.18	40.2/ 3.3	1973	86213	
T6		S	0.06	R. T.	T-L	67.2	15.800	0.064	4.020	---	---	12.10	31.68	---	---	---	1973	86213	
			0.06			67.2	15.820	0.064	4.010	4.400	---	12.60	32.94	---	34.80	---	1973	86213	
			0.06			67.2	15.820	0.064	4.000	4.200	---	12.30	32.11	32.2/ 0.6	33.04	33.9/ 1.2	1973	86213	
T6		S	0.12	R. T.	T-L	68.4	2.960	0.122	0.993	1.540	---	18.90	25.37	---	35.54	---	1973	86213	
			0.12			68.4	2.970	0.122	0.997	1.540	---	17.90	24.08	---	33.61	---	1973	86213	
			0.12			68.4	2.970	0.122	0.989	1.500	---	18.10	24.22	---	33.17	---	1973	86213	
			0.12			68.4	2.970	0.122	0.983	1.500	---	19.10	25.46	---	35.01	---	1973	86213	
			0.12			68.4	3.000	0.123	1.000	---	---	18.40	24.78	---	---	---	1973	86213	
			0.12			68.4	3.000	0.121	1.100	1.380	---	15.90	22.82	---	27.03	---	1973	86213	
			0.12			68.4	3.000	0.123	1.000	1.000	---	18.00	24.24	---	24.24	---	1973	86213	
			0.12			68.4	3.000	0.122	1.110	1.310	---	15.00	21.67	24.1/ 1.3	24.46	30.4/ 5.0	1973	86213	

TABLE 7.4.1.1

MEAN PLANE STRAIN FRACTURE TOUGHNESS DATA OF  
ALUMINUM ALLOY 2021 AT ROOM TEMPERATURE

CONDITION/HT	MEAN K <sub>IC</sub> ± STANDARD (KSI SQRT(IN)) DEVIATION		(NUMBER OF SPECIMENS)	
	PLATE			
	L-T	I-T	S-L	
T81	27 0 ± 0.5 (3)	---	---	
T81 REPAIR WELD + AGE WITH 2319 FILLER WIRE	---	15 8 ± 0.7 (6)	---	
T81 WELD + AGE WITH 2319 FILLER WIRE	---	19 4 ± 2.7 (9)	---	

TABLE 7.4.2.1

CONDITION	ALUMINUM				2021				K(1C)				DATE	REFER	
	--PRODUCT-- FORM	THICK (IN)	TEMP (F)	SPECIMEN ORIENT	YIELD (KSI)	-----SPECIMEN-----		CRACK LENGTH (IN)	2.5* (K(1C)/TYS)**2 (IN)	K(1C) MEAN (KSI*SQRT IN)	STAN DEV				
						WIDTH (IN)	THICK (IN)					DESIGN			
T81	P	1.00	R.T.	L-T	61.2	1.990	0.996	CT	0.937	0.47	26.60		1972	84363	
		1.00			61.2	2.000	0.995	CT	0.933	0.50	27.50		1972	84363	
		1.00			61.2	2.000	0.993	CT	0.961	0.48	26.80	27.0/	0.5	1972	84363
T81 REPAIR WELD + AGE WITH 2319 FILLER WIRE	P	1.00	R.T.	T-L	----	2.000	1.000	CT	1.000	0.15	15.90		1970	80073	
		1.00			----	2.000	1.000	CT	1.010	0.14	15.20		1970	80073	
		1.00			----	2.000	1.000	CT	0.990	0.14	15.20		1970	80073	
		1.00			----	2.000	1.000	CT	1.030	0.16	16.00		1970	80073	
		1.00			----	2.000	1.000	CT	1.040	0.14	15.20		1970	80073	
T81 WELD + AGE WITH 2319 FILLER WIRE	P	1.00	R.T.	T-L	----	2.000	1.000	CT	1.020	0.18	17.00	15.8/	0.7	1970	80073
		1.00			----	2.000	1.000	CT	1.040	0.19	17.60		1970	80073	
		1.00			----	2.000	1.000	CT	1.030	0.20	18.40		1970	80073	
		1.00			----	2.000	1.000	CT	0.990	0.16	16.40		1970	80073	
		1.00			----	2.000	1.000	CT	1.020	0.32	22.90		1970	80073	
T8151	P	1.00	84	L-T	64.8	1.500	0.749	CT	0.706	0.32	23.10		1973	86213	
		1.00			64.8	1.500	0.749	CT	0.714	0.29	22.00	22.6/	0.8	1973	86213
	P	1.00	84	T-L	63.4	1.500	0.731	CT	0.726	0.23	19.10		1973	86213	

TABLE 7.4.3.1

CONDITION	ALUMINUM			2021		K (ISCC)		STAN DEV	TEST TIME (MIN)	DATE REFER	
	--PRODUCT-- FORM THICK (IN)	TEST SPEC TEMP OR (F)	YIELD STR (KSI)	ENVIRONMENT	SPECIMEN		CRACK				
					WIDTH (IN) W	THICK (IN) B					DESIGN (IN) (**SG)
T81	P	2 50 R T S-L	59 1	INDUSTRIAL ATM	2 000	1 000 CT	----	19 60	19 00	----	1973 86688
T81	P	2 50 R T S-L	59 1	SALT-DICHRO- MATE-ACETATE	2 000	1 000 CT	----	19 60	19 00	----	1973 86688
T81	P	2 50 R T S-L	59 1	SEACOAST ATM	2 000	1 000 CT	----	19 60	19 00	----	1973 86688
T81 OVERHEATED WELD	P	1 00 R T S-L	18 3	3 5 PCT NACL	2 500	1 000 WDL	----	14 00	11 30	>	4320 1970 80073
T81 REPAIRED WELD AGED 16HR 325F WELD FUSION LINE	P	1 00 R T S-L	24 7	3 5 PCT NACL	2 500	1 000 WDL	----	14 00	7 70	>	4320 1970 80073
T81 REPAIRED WELD AGED 16HR 325F WELD CENTER LINE	P	1 00 R T S-L	24 7	3 5 PCT NACL	2 500	1 000 WDL	----	14 00	> 10 30	>	4320 1970 80073
T81 REPAIRED WELD AGED 16HR 325F HEAT AFFECTED ZONE	P	1 00 R T S-L	28 0	3 5 PCT NACL	2 500	1 000 WDL	----	14 00	11 90	>	4320 1970 80073
T81 WELDED AGED 16HR 325F HEAT AFFECTED ZONE	P	1 00 R T S-L	25 0	3 5 PCT NACL	2 500	1 000 WDL	----	14 00	13 30	>	4560 1970 80073
T81 WELDED AGED 16HR 325F WELD CENTER LINE	P	1 00 R T S-L	23 4	3 5 PCT NACL	2 500	1 000 WDL	----	17 00	7 20	>	4320 1970 80073
T81 WELDED AGED 16HR 325F FUSION LINE	P	1 00 R T S-L	23 4	3 5 PCT NACL	2 500	1 000 WDL	----	17 00	8 50	>	4320 1970 80073

TABLE 7.5.1.1

MEAN PLANE STRAIN FRACTURE TOUGHNESS DATA OF  
ALUMINUM ALLOY 2024 AT ROOM TEMPERATURE

CONDITION/HT	MEAN K <sub>IC</sub> ± STANDARD (KSI SQRT(IN)) DEVIATION		(NUMBER OF SPECIMENS)	
	L-T	I-L	S-L	
<b>PLATE</b>				
T351	35.0 ± 1 (2)	-----	-----	
T851	27.3 ± 2.4 (65)	20.7 ± 1.9 (63)	-----	
<b>FORGING</b>				
CONDITION/HT	L-T	I-L	S-L	
T852	29.2 ± 5.2 (24)	18.9 ± 2.6 (16)	15.9 ± 0.8 (8)	
<b>EXTRUSION</b>				
CONDITION/HT	L-T	I-L	S-L	
T351	-----	25.0 ± 0.9 (5)	-----	
T3511	38.0 ± 2.6 (4)	-----	-----	
T8510	30.4 ± 2.7 (3)	16.5 ± 1.0 (3)	19.7 ± 1.4 (3)	
T8511	24.1 ± 0.4 (2)	16.0 ± 0.0 (2)	-----	



TABLE 7.5.1.2

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR

ALUMINUM 2024

TEST CONDITIONS

SPECIMEN  
ORIENTATION L-S

ENVIRONMENT H H A  
AT R T

CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQ (HZ)	DELTA K LEVELS (KSI SQRT(IN))		FATIGUE CRACK GROWTH RATES (MICRO IN/CYCLE)				
				2	5	10	20	50	100	
T851	PLATE	0.10	20.00			0.50				
T851	PLATE	0.10	30.00			0.34				
T851	PLATE	0.10	20.00					5.84		

TABEL 7.5.1.3

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR

ALUMINIUM 2024

TEST CONDITIONS

SPECIMEN  
ORIENTATION L-T

ENVIRONMENT DRY AIR  
AT R T

CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQ (HZ)	DELTA K LEVELS (KSI SQRT(IN))	2	5	10	20	50	100
T81	SHEET	-0.25	6.00				4.17	46.1		
T81	SHEET	0.10	6.00				5.65	52.2		
T81	SHEET	0.30	6.00				10.2	66.4		
T81	SHEET	0.50	6.00			1.26	14.8	288		

TABLE 7.5.1.4

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR

ALUMINUM 2024

## TEST CONDITIONS

SPECIMEN  
ORIENTATION L-TENVIRONMENT L H A  
A T R T

CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQ (HZ)	DELTA K LEVELS (KSI SQRT(IN))	2.5	5	10	20	50	100
T81	SHEET	0.08	1.00					5.82	79.2	
T81	SHEET	0.08	6.00					4.78	71.8	
T81	SHEET	0.30	6.00					3.64	193	
T81	SHEET	0.50	6.00			1.26	17.6	686		
T851	PLATE	0.08	1.00	SPEC THK=0.50"				5.52		
T851	PLATE	0.08	1.00	SPEC THK=1.00"				7.27		
T851	PLATE	0.08	6.00	SPEC THK=1.00"				8.93		
T851	PLATE	0.30	1.00					12.9		
T852	FORGING	0.08	0.10					6.88		
T852	FORGING	0.08	1.00	SPEC THK=1.00"		1.06		9.01		
T852	FORGING	0.08	6.00	SPEC THK=0.25"-0.50"				3.72	27.4	

TABLE 7.5.1.5

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR

ALUMINUM 2024

TEST CONDITIONS

SPECIMEN  
ORIENTATION L-T

ENVIRONMENT AIR  
AT - 65 F

CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQ (HZ)	DELTA K LEVELS (KSI SQRT(IN))		FATIGUE CRACK GROWTH RATES (MICRO IN/CYCLE)		
				2.5	5	10	20	50 100
T351	SHEET	0.50	10			0.35	19.7	
T351	SHEET	0.80	10			20.4		
T351	PLATE	0.50	1.00 - 2.00					2098

TABLE 7.5.1.6

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR

ALUMINUM 2024

## TEST CONDITIONS

SPECIMEN  
ORIENTATION L-TENVIRONMENT  
LAB AIR  
AT R.T.

CONDITION	PRODUCT FORM	STRESS RATIO	FREQ. (Hz)	DELTA K LEVELS (KSI SQRT(IN.))	2.5	5	10	20	50	100
T3	SHEET	0.00	13.30					28.6		
T3	SHEET	0.20	10.00		0.21	0.22	0.27	9		
T3	SHEET	0.33	3.33					188		
T3	PLATE	-1.00	20.00			0.29	0.3	70.3		
T3	PLATE	-0.50	20.00		0.14	0.15	0.2	67.2		
T3	PLATE	0.05	20.00			0.36				
T351	SHEET	0.00	3.00-6.00			0.15	0.4	0		
T351	SHEET	0.40	3.00-6.00					163		
T351	SHEET	0.80	3.00-6.00			0.2				
T351	PLATE	-1.00	1.00-16.00					74.6		
T351	PLATE	-1.00	3.00-5.00			0.27	0.44	41.3		
T351	PLATE	-0.50	3.00-5.00			0.25	0.67	47.2		
T351	PLATE	0.00	1.00-16.00						2324	
T351	PLATE	0.00	5.00-20.00			0.15				
T351	PLATE	0.01	1.00-10.00			0.20	0.09	39.8		
T351	PLATE	0.01	20.00				0.98	52.1		

TABLE 7.5.1.6 (Con't)

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR

ALUMINUM 2024

TEST CONDITIONS

SPECIMEN  
ORIENTATION L-T

ENVIRONMENT LAP AIR  
AT R T

CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQ (Hz)	DELTA K LEVELS (KSI SQRT(IN))	2 S	5	10	20	50	100
T301	PLATE	0.10	3.00					55.0		
T301	PLATE	0.10	20.00				8.62			
T301	PLATE	0.30	20.00				10.4			
T301	PLATE	0.33	25.00				7.88			
T301	PLATE	0.40	1.00-10.00			0.70	11.7			
T301	PLATE	0.40	1.00-16.00					232		
T301	PLATE	0.40	5.00-20.00			0.47				
T301	PLATE	0.50	20.00				13.1			
T301	PLATE	0.60	1.00-10.00			0.88	13.8			
T301	PLATE	0.60	20.00				14.4			
T301	PLATE	0.80	1.00-16.00	SPEC THK=0.189-0.250"			40.9			
T301	PLATE	0.80	5.00-20.00	SPEC THK=0.250"			1.41			
T301	PLATE	0.80	1.00-10.00			1.71	23.2			
T301	EXTRUSION	0.05	9.00						127	
T301	EXTRUSION	0.50	9.00						0818	

TABLE 7.5.1.6 (Con't)

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR

ALUMINUM 2024

## TEST CONDITIONS

SPECIMEN  
ORIENTATION L TENVIRONMENT LAB AIR  
AT R T

CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQ (HZ)	DELTA K LEVELS (KSI SQRT(IN))	2	5	10	20	50	100
T42	PLATE	-1.00	10.00				5.41	44.3	2809	
T42	PLATE	0.02	10.00				4.25	23.6	1131	
T42	PLATE	0.50	10.00				424	7.89	42.5	
T31	SHEET	0.05	2.00						68.1	
T31	SHEET	0.40	2.00						106	
T51	PLATE	0.02	1.00-10.00					3.90	57.0	

TABLE 7.5.1.7

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR

ALUMINUM 2024

## TEST CONDITIONS

SPECIMEN  
ORIENTATION L-T

ENVIRONMENT

AIR  
AT 200 F

CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQ (HZ)	DELTA K LEVELS (KSI SQRT(IN))		FATIGUE CRACK GROWTH RATES (MICRO IN/CYCLE)				
				2	5	10	20	50	100	
T351	PLATE	0.01	20.00					92		
T351	PLATE	0.10	20.00					870		
T351	PLATE	0.30	20.00					108		
T351	PLATE	0.50	20.00					135		
T351	PLATE	0.60	20.00					143		



TABLE 7.5.1.8

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR

ALUMINUM 2024

TEST CONDITIONS

SPECIMEN  
ORIENTATION L-T

ENVIRONMENT AIR  
AT 300 F

CONDITION/MT	PRODUCT FORM	STRESS RATIO	FREQ (Hz)	DELTA K LEVELS (KSI SQRT(IN))	2	5	10	20	50	100
T351	PLATE	0.01	20.00				7.43			
T351	PLATE	0.10	20.00				9.35			
T351	PLATE	0.30	20.00				12.3			
T351	PLATE	0.50	20.00				13.6			
T351	PLATE	0.60	20.00				15.6			

TABLE 7.5.1.9

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR

ALUMINUM 2024

## TEST CONDITIONS

SPECIMEN  
ORIENTATION 1-1ENVIRONMENT AIR  
AT 400 F

CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQ (HZ)	DELTA K LEVELS (KSI SQRT(IN))	2	5	10	20	50	100
T351	PLATE	0.01	20.00				6.89			
T351	PLATE	0.10	20.00				10.6			
T351	PLATE	0.30	20.00				12.4			
T351	PLATE	0.50	20.00			1.47	14.6			
T351	PLATE	0.60	20.00			1.56	17.6			

TABLE 7.5.1.10

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR

ALUMINUM 2024

## TEST CONDITIONS

SPECIMEN  
ORIENTATION L-TENVIRONMENT H H A  
A T R T

CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQ (HZ)	DELTA K LEVELS (KSI SQRT(IN))	2 5	5	10	20	50	100
T3	SHEET	0.05	2.00					35.3		
T351	SHEET	0.00	9.00				4.09			
T351	PLATE	0.33	25.00			0.35	10.8	96.4		
T351	PLATE	0.33	25.00			1.10	17.0			
T351	SHEET	0.70	9.00			0.63	8.42			
T3511	EXTRUSION	0.05	9.00			0.06	7.05			
T3511	EXTRUSION	0.50	9.00			0.43	4.35	62.3		
T3511	EXTRUSION	0.50	9.00		0.05					
T62	SHEET	0.10	1.00			0.31	4.68			
T62	SHEET	0.30	1.00			0.46	10.1	96.4		

TABLE 7.5.1.10 (Con't)

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR  
ALUMINUM 2024

## TEST CONDITIONS

SPECIMEN

ORIENTATION 1-7

ENVIRONMENT

H H A  
A T R 7

CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQ (HZ)	DELTA K LEVELS (KSI SQRT(IN))	2 5	5	10	20	50	100
T81	SHEET	-0.25	1.00			0.28	6.45	51.3		
T81	SHEET	0.10	0.10				43.9			
T81	SHEET	0.10	1.00				8.15	70.1		
T81	SHEET	0.30	1.00			1.04	15.2			
T81	SHEET	0.50	1.00			1.50	17.2			
T851	PLATE	0.33	25.00			0.92	12.2			

TABLE 7.5.1.11

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR

ALUMINUM 2024

TEST CONDITIONS

SPECIMEN ORIENTATION L-T ENVIRONMENT J P 4 AT R T

CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQ (HZ)	DELTA K LEVELS (KSI SQRT(IN))	2	5	10	20	50	100
TB1	SHEET	0.08	1.00				7.53	72.0		
TB51	PLATE	0.08	1.00				8.55	108		

TABLE 7.5.1.12  
FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR  
ALUMINUM 2024

TEST CONDITIONS

SPECIMEN  
ORIENTATION L-T

ENVIRONMENT S.T.W.  
A.T.R.T

CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQ (Hz)	DELTA K LEVELS (KSI SQRT(IN))	FATIGUE CRACK GROWTH RATES (MICRO IN/CYCLE)				
				2.5	5	10	20	50	100
T351	SHEET	0.00	1.00-10.00			3.21			
T351	SHEET	0.33	1.00-10.00				113		
T62	SHEET	0.10	1.00			0.77	7.61		
T62	SHEET	0.50	1.00		0.13	1.43			
T62	SHEET	0.70	1.00			2.05			
T81	SHEET	-0.20	1.00			0.74	11.2		
T81	SHEET	0.08	1.00				8.00	94.0	
T81	SHEET	0.10	1.00			0.36	8.25		
T851	PLATE	0.08	1.00				7.92	112	

TABLE 7.5.1.13

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR

ALUMINUM 2024

## TEST CONDITIONS

SPECIMEN

ORIENTATION

T-T

ENVIRONMENT

H H A  
A T R T

CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQ (HZ)	DELTA K LEVELS (KSI SQRT(IN))		FATIGUE CRACK GROWTH RATES (MICRO IN CYCLE)			
				2	5	1	50	100	
T851	PLATE	0.10	20.00			0.57	4.87		
T851	PLATE	0.10	20.00			0.63	5.24		
T851	PLATE	0.50	2.00			0.99	11.7		
T851	PLATE	0.50	20.00		0.07	1.13	6.47		

TABLE 7.5.1.14

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR

ALUMINUM 2024

## TEST CONDITIONS

SPECIMEN  
ORIENTATION T-SENVIRONMENT 3.5% NaCl  
AT R.T.

CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQ (HZ)	DELTA K LEVELS (KSI SQRT(IN))		FATIGUE CRACK GROWTH RATES (MICRO IN/CYCLE)			
				2.5	5	10	20	50	100
T851	PLATE	0.10	20.00		1.18	5.81			
T851	PLATE	0.10	20.00			6.73			
T851	PLATE	0.10	20.00			5.92			
T851	PLATE	0.50	20.00			10.7	265		
T851	PLATE	0.50	20.00		0.96	10.0			



TABLE 7.5.1.15  
FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR  
ALUMINUM 2024

TEST CONDITIONS

SPECIMEN  
ORIENTATION T L

ENVIRONMENT DRY AIR  
AT R T

CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQ (HZ)	DELTA K LEVELS (KSI SQRT(IN))	2.5	5	10	20	50	100
T62	SHEET	0.10	6.00			0.81	11.3			
T62	SHEET	0.30	6.00			0.71	11.3			
T62	SHEET	0.50	6.00		0.04	0.94	13.1			
T81	SHEET	0.25	6.00					3.81	48.3	
T81	SHEET	0.10	6.00					3.51		

TABLE 7.5.1.16  
FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR  
ALUMINUM 2024

TEST CONDITIONS		ENVIRONMENT		L H A	
SPECIMEN ORIENTATION	1-L	AT R T			
CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQ (HZ)	DELTA K LEVELS (KSI SQRT(IN))	FATIGUE CRACK GROWTH RATES (MICRO IN/CYCLE)
				2 5	5 10 20 50 100
TS1	SHEET	0 08	1 00- 6 00	0 73	4 29 72 8
TS2	PLATE	0 08	1 00		5 90
TS3	PLATE	0 08	6 00		5 45

TABLE 7.5.1.17

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR

ALUMINUM 2024

TEST CONDITIONS

SPECIMEN  
GEOMETRY

ENV.

ENVIRONMENT LAB AIR  
AT R T

CONDITION	PROBANT FORM	STRESS RATIO	FREQ (Hz)	DELTA K LEVELS (KSI SQRT(IN))	FATIGUE CRACK GROWTH RATES (MICR IN/CYCLE)					
					2.5	5	10	20	50	100
T3	SHEET	0.00	13.30				0.32	21.6		
T3	SHEET	0.05	30.00			0.25				
T3	SHEET	0.13	13.30				7.07	62.6		
T3	SHEET	0.40	30.00			0.94				
T3	SHEET	0.60	30.00			1.22				
TBS-	ROCKET	0.33	5.17				5.50			
TBS1	SHEET	0.08	0.10-15.00			0.71	5.10	395		
TBS1	SHEET	0.10	0.10-40					696		
TBS1	SHEET	0.10	1.00-10.00					542		
TBS1	SHEET	0.10	2.00-9.00				0.04	100		
TBS1	SHEET	0.10	10.00-13.00			0.99	3.34			
TBS1	SHEET	0.10	10.00-20.00			1.05	10.0			
TBS1	SHEET	0.40	10.00-15.00			1.23	11.5			
TBS1	PLATE	0.10	1.00-5.00					127		
TBS1	PLATE	0.10	10.00					5.91		

TABLE 7.5.1.18

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR

ALUMINUM 2024

TEST CONDITIONS

TEMPERATURE 70 F

ENVIRONMENT AIR

AT 140 F

SPECIMEN	PRODUCT FORM	STRESS RATIO	FREQ (HZ)	DELTA K LEVELS (KSI SQRT(IN))		FATIGUE CRACK GROWTH RATES (MICRO IN/CYCLE)		
				2.5	5	10	50	100
SHEET		0.43	5.00-10.00		0.79	1.43		
		0.75	5.00-10.00		1.77	3.11		

TABLE 7.5.1.19

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR

ALUMINUM 2024

## TEST CONDITIONS

SPECIMEN  
ORIENTATION P-CENVIRONMENT H H A  
AT R (

CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQ (HZ)	DELTA K LEVELS (KSI SQRT(IN))	2 5	5	10	20	50	100
T62	SHEET	0 30	1 00			0 78	1 1 7			
T62	SHEET	0 50	1 00		0 12	1 26	1 4 5			
T81	SHEET	-0 25	1 00				4 89	6 4 7		
T81	SHEET	0 10	1 00				6 37	129		
T81	SHEET	0 50	1 00			1 44	22 2			
T851	PLATE	0 10	20 00				7 38	71 4		
T851	PLATE	0 10	20 00			0 50	9 04			
T851	PLATE	0 50	20 00		0 17	1 31	17 2			

TABLE 7.5.1.20  
FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR  
ALUMINUM 2024

TEST CONDITIONS

SPECIMEN  
ORIENTATION 1-L

ENVIRONMENT 3.5% NaCl  
AT R.T.

CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQ. (HZ)	DELTA K LEVELS: (KSI SQRT(IN))	2.5	5	10	20	50	100
T851	PLATE	0.10	0 10-10 00				18.2			
T851	PLATE	0.10	20.00			1.47	11.1	126		
T851	PLATE	0.10	20.00			0.91	9.93			
T851	PLATE	0.50	20.00		0.21	2.28	22.4			

TABLE 7.5.1.21

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR

ALUMINUM 2024

## TEST CONDITIONS

SPECIMEN  
ORIENTATION 1-LENVIRONMENT S.T.W.  
A.T.R.T

CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQ (HZ)	DELTA K LEVELS (KSI SQRT(IN))	FATIGUE CRACK GROWTH RATES (MICRO IN./CYCLE)				
				2	5	10	20	50	100
T62	SHEET	-0.25	1.00			0.86	4.87		
T62	SHEET	0.10	1.00			0.69	5.87		
T62	SHEET	0.30	1.00			1.24	17.0		
T62	SHEET	0.50	1.00		0.15	2.83	25.7		
T81	SHEET	0.08	1.00-6.00				6.90	96.3	
T81	SHEET	0.10	1.00			0.39	7.27	101	
T852	FORGING	0.08	1.00					5.19	

**TABLE 7.5.2.1**

CONDITION	ALUMINUM				K (IC)																											
	--PRODUCT--		TEST SPECIMEN		YIELD STRENGTH		SPECIMEN		CRACK		2.5*		K (IC)		K (IC)		STAN															
	FORM	THICK (IN)	TEMP (F)	ORIENT	WIDTH (IN)	THICK (IN)	DESIGN	LENGTH (IN)	A	LENGTH (IN)	(IN)	(IN)	K (IC)	MEAN	DEV	DATE	REFER															
T351	P	2.50	R.T.	L-T	53.8	2.000	1.000	CT	0.995	0.78	----	30.00	40.00	35.0/	7.1	1973	86213															
																		3.00	54.5	2.000	NB	----	40.00	35.0/	7.1	1972	82878					
T351	P	2.50	85	L-T	55.9	2.000	1.000	CT	1.032	0.63	----	28.10	27.40	27.8/	0.5	1973	86213															
																		2.50	55.9	2.000	CT	1.001	0.60	----	27.40	27.8/	0.5	1973	86213			
T351	P	2.00	R.T.	T-L	43.8	4.010	2.000	CT	2.147	1.51		34.00				1973	86213															
T351	P	1.00	84	T-L	49.0	1.500	0.749	CT	0.749	0.72	----	26.30	26.60	26.5/	0.2	1973	86213															
																		1.00	49.0	1.500	CT	0.755	0.74	----	26.60	26.5/	0.2	1973	86213			
T351	P	3.00	R.T.	S-T	64.0	2.500	1.250	CT	-----	-----	-----	22.00	21.00	21.3/	0.6	1974	90011															
																		3.00	64.0	2.500	CT	-----	-----	-----	21.00	21.3/	0.6	1974	90011			
																		3.00	64.0	2.500	CT	-----	-----	-----	21.00	21.3/	0.6	1974	90011			
T351	P	2.50	85	S-L	44.8	2.000	0.999	CT	0.928	0.59		21.80				1973	86213															
T351	P	2.50	90	S-L	42.4	2.040	1.000	CT	1.021	0.50		18.90				1973	86213															
T351	E	3.00	R.T.	T-L	41.8	2.970	1.498	CT	1.561	0.92		25.30	25.30	25.30		1973	86213															
																		3.00	41.8	2.970	1.498	CT	1.555	0.93		25.30	25.30	25.30	1973	86213		
																		5.00	43.4	2.970	1.500	CT	1.558	0.73		23.40	23.40	23.40	1973	86213		
																		3.00	43.5	3.000	1.500	CT	1.579	0.83		25.10	25.10	25.10	1973	86213		
		3.00	43.5		43.5	3.000	1.499	CT	1.562	0.86		25.30		25.0/	0.9	1973	86213															
T351	E	3.50	82	T-L	38.7	2.000	1.000	CT	1.048	0.95		23.80	24.40	24.1/	0.3	1973	86213															
																		5.00	41.1	3.000	1.498	CT	1.528	0.88		24.40	24.1/	0.3	1973	86213		
																		5.00	41.1	3.000	1.499	CT	1.514	0.85		24.00	24.1/	0.3	1973	86213		
T351	E	3.00	82	S-L	41.7	2.000	0.999	CT	1.017	0.72		22.40	21.00	23.20	22.5/	1.1	1973	86213														
																			3.00	41.7	2.000	1.000	CT	1.012	0.63		21.00	23.20	22.5/	1.1	1973	86213
																			3.00	42.8	2.000	1.000	CT	0.988	0.73		23.20	23.20	23.20	1973	86213	
																			3.00	42.8	2.000	1.000	CT	1.007	0.75		23.90	22.5/	1.1	1973	86213	
T351	FB	3.50	82	T-L	41.5	2.000	0.999	CT	1.050	0.94		25.50	25.50	25.50		1973	86213															
																		3.50	41.5	2.000	1.000	CT	1.045	0.92		25.20	25.20	25.20	1973	86213		
																		5.00	44.5	3.000	1.500	CT	1.594	0.75		24.40	24.40	24.40	1973	86213		
																		5.00	44.5	3.000	1.500	CT	1.506	0.80		25.10	25.10	25.10	1973	86213		
																		3.00	45.7	3.000	1.500	CT	1.504	0.63		23.00	23.00	23.00	1973	86213		



**TABLE 7.5.2.1 (Con't)**

CONDITION	ALUMINUM			2024			K(1C)			K(1C) STAN K(1C) MEAN DEV (K(1C) SORT IN)	DATE	REFER			
	--PRODUCT-- FORM	THICK (IN)	TEST TEMP (F)	SPECIMEN ORIENT	YIELD STRENGTH (KSI)	WIDTH (IN)	THICK (IN)	DEBION (IN)	CRACK LENGTH (IN)				2.5* (IN)		
T351	FB	3.00	82	T-L	45.7	3.000	1.500	CT	1.480	0.67	24.00	24.5/	0.9	1973	86213
T351	FB	3.00	82	S-L	42.1	1.990	1.002	CT	0.963	0.75	23.00			1973	86213
		3.00			42.1	1.990	1.001	CT	0.970	0.73	22.70	22.9/	0.2	1973	86213
T351	E	----	R. T.	L-T	61.2	----	1.200	--	----	1.06	39.90			1978	84007
		----			61.2	----	1.200	--	----	1.03	39.30			1978	84007
		----			61.2	----	1.200	--	----	0.98	38.40			1978	84007
		----			61.2	----	1.200	--	----	0.78	34.20	38.0/	2.6	1978	84007
T851	P	3.00	65	L-B	64.4	1.500	0.750	CT	0.750	0.55	30.30			1972	83243
		3.00			64.4	1.500	0.750	CT	0.750	0.59	31.40			1972	83243
		3.00			64.4	1.500	0.750	CT	0.750	0.52	29.30	30.3/	1.1	1972	83243
T851	P	3.00	0	L-B	63.3	1.500	0.750	CT	0.750	0.63	31.70			1972	83243
		3.00			63.3	1.500	0.750	CT	0.750	0.62	31.40	31.6/	0.2	1972	83243
T851	P	3.00	R. T.	L-B	61.0	1.500	0.750	CT	0.750	0.69	32.20			1972	83243
		3.00			61.0	1.500	0.750	CT	0.750	0.67	31.70			1972	83243
		3.00			61.0	1.500	0.750	CT	0.750	0.61	30.00			1972	83243
		1.37			66.1	1.006	0.499	CT	0.513	0.27	21.90			1978	84001
		1.37			66.1	1.006	0.499	CT	0.493	0.28	22.90			1978	84001
		1.50			67.1	1.000	0.602	CT	0.623	0.38	26.20	27.5/	4.5	1973	86429
T851	P	1.37	86	L-B	65.9	1.000	0.500	CT	0.504	0.26	21.30			1973	86213
		1.37			65.8	1.000	0.500	CT	0.484	0.27	21.60			1973	86213
		1.37			65.8	1.000	0.500	CT	0.491	0.23	20.10	21.0/	0.8	1973	86213
T851	P	1.37	88	L-B	66.1	1.000	0.499	CT	0.493	0.31	23.40			1973	86213
		1.37			66.1	1.000	0.500	CT	0.513	0.29	22.40	22.9/	0.7	1973	86213
T851	P	3.00	200	L-B	56.4	1.500	0.750	CT	0.750	0.70	29.70			1972	83243
		3.00			56.4	1.500	0.750	CT	0.750	0.75	30.90	30.3/	0.8	1972	83243
T851	P	3.00	65	L-T	64.8	1.500	0.750	CT	0.750	0.39	26.50			1972	83243

TABLE 7.5.2.1 (Con't)

CONDITION	--PRODUCT--				ALUMINUM		2024				K(1C)		K(1C)		STAN DEV	DATE	REFER
	FORM	THICK (IN)	TEMP (F)	SPECIMEN ORIENT	YIELD STRENGTH (KSI)	-----SPECIMEN-----		DESIGN	CRACK LENGTH (IN)	2.5* (K(1C)/TVS)**2 (IN)	K(1C) MEAN (KSI*SQRT IN)	K(1C)					
						WIDTH (IN)	THICK (IN)						A				
T851	P	3.00	-	65	L-T	66.8	1.500	0.750	CT	0.750	0.43	27.60	27.60	1.6	1972	83243	
		3.00				66.8	1.500	0.750	CT	0.750	0.33	24.40	26.2/		1972	83243	
T851	P	3.00	0		L-T	65.5	1.500	0.750	CT	0.750	0.37	25.20	25.20		1972	83243	
		3.00				65.5	1.500	0.750	CT	0.750	0.51	29.50	29.50	2.2	1972	83243	
T851	P	3.20	R. T.		L-T	59.3	2.500	1.243	CT	1.206	0.25	18.70	18.70		1971	84360	
		3.20				59.3	2.500	1.254	CT	1.226	0.25	18.60	18.60		1971	84360	
T851	P	2.50				60.0	1.990	1.000	CT	1.005	0.40	23.90	23.90		1973	86213	
		4.00				62.4	2.000	1.020	NB	-----	0.39	24.60	24.60		1974	90981	
T851	P	4.00				62.4	2.000	1.020	NB	-----	0.38	24.40	24.40		1974	90981	
		3.00				63.4	1.500	0.750	CT	0.750	0.45	26.90	26.90		1972	83243	
T851	P	3.00				63.4	1.500	0.750	CT	0.750	0.47	27.30	27.30		1972	83243	
		2.00				63.8	2.500	1.251	CT	1.311	0.41	25.70	25.70		1971	84360	
T851	P	2.00				63.8	2.500	1.250	CT	1.303	0.40	25.50	25.50		1971	84360	
		2.00				63.9	2.500	1.250	CT	1.203	0.30	22.10	22.10		1971	84360	
T851	P	2.00				63.9	2.500	1.250	CT	1.207	0.30	22.30	22.30		1971	84360	
		3.00				65.0	2.500	0.626	CT	1.239	0.34	23.80	23.80		1972	84306	
T851	P	3.00				65.0	3.000	1.000	CT	-----	0.26	21.00	21.00		1974	90011	
		3.00				65.0	2.490	0.625	CT	1.259	0.27	21.30	21.30		1972	84306	
T851	P	3.00				65.0	2.000	0.750	CT	-----	0.37	25.00	25.00		1974	90011	
		3.00				65.0	2.480	0.624	CT	1.292	0.25	20.70	20.70		1972	84306	
T851	P	3.00				65.0	3.000	1.000	CT	-----	0.26	21.00	21.00		1974	90011	
		3.00				65.0	3.000	1.000	CT	-----	0.28	22.00	22.00		1974	90011	
T851	P	1.75				65.0	3.000	0.755	CT	1.500	0.32	23.40	23.40		1972	84306	
		3.00				65.0	2.000	0.750	CT	-----	0.34	24.00	24.00		1974	90011	
T851	P	3.00				65.0	2.000	0.620	CT	-----	0.50	29.00	29.00		1974	90011	
		3.00				65.0	2.500	0.625	CT	1.232	0.28	21.90	21.90		1972	84306	
T851	P	3.00				65.0	2.000	0.750	CT	-----	0.37	25.00	25.00		1974	90011	
		3.00				65.0	2.000	0.620	CT	-----	0.50	29.00	29.00		1972	84306	
T851	P	1.75				65.0	3.000	0.756	CT	1.515	0.31	22.90	22.90		1974	90011	
		3.00				65.0	3.990	0.499	CT	3.035	0.44	27.30	27.30		1972	84306	
T851	P	3.00				65.0	2.300	0.750	CT	-----	0.60	32.00	32.00		1974	90011	
		1.75				65.0	3.990	0.499	CT	3.064	0.46	27.80	27.80		1972	84306	
T851	P	3.00				65.0	2.490	0.624	CT	1.263	0.29	20.40	20.40		1972	84306	
		1.00				65.3	1.987	0.988	CT	1.093	0.32	23.70	23.70		1978	HPC01	
T851	P	0.87				65.3	1.989	0.877	CT	1.074	0.28	22.50	22.50		1978	HPC01	
		1.37				65.6	3.000	1.385	NB	1.480	0.37	25.20	25.20		1973	86213	

TABLE 7.5.2.1 (Con't)

CONDITION	ALUMINUM						2024			K(IIC)		K(IIC) STAN DEV	DATE	REFER
	--PRODUCT--		YIELD (KSI)	-----SPECIMEN-----		CRACK LENGTH (IN)	2.5* (K(IIC)/TYS)**2 (IN)	K(IIC) MEAN (KSI*SQRT IN)						
	FORM	THICK (IN)		TEST TEMP (F)	SPECIMEN ORIENT				WIDTH (IN)	THICK (IN)	DESIGN			
T851	P	1.37	R. T.	L-T	65.6	1.978	1.001	CT	1.059	0.30	23.20	1978 MPC01		
						2.980	1.383	N8	1.490	0.27	22.20	1978 MPC01		
						65.6	1.990	1.001	CT	0.975	0.28	22.50	1978 MPC01	
						65.6	3.020	1.383	N8	1.480	0.27	21.80	1978 MPC01	
						65.6	3.000	1.386	N8	1.545	0.31	23.20	1973 86213	
						65.6	3.000	1.383	N8	1.500	0.31	23.20	1973 86213	
						65.6	2.000	1.001	CT	1.048	0.30	22.80	1973 86213	
						65.6	3.000	1.386	N8	1.531	0.33	23.70	1973 86213	
						65.8	3.020	1.393	N8	1.510	0.36	25.40	1978 MPC01	
						65.8	2.980	1.393	N8	1.490	0.34	25.00	1978 MPC01	
						66.0	3.000	0.994	CT	1.540	0.33	24.00	1972 84306	
						66.0	3.000	0.797	CT	1.526	0.35	24.30	1973 85836	
						66.0	3.000	0.995	CT	1.533	0.32	23.50	1972 84306	
						66.1	2.990	1.400	N8	1.525	0.25	21.80	1978 MPC01	
						66.1	3.000	1.401	N8	1.445	0.25	20.90	1973 86213	
						66.1	3.000	1.400	N8	1.536	0.28	22.10	1973 86213	
						66.1	1.902	0.761	CT	0.781	0.27	22.10	1978 MPC01	
						66.1	3.008	1.401	N8	1.474	0.25	21.50	1978 MPC01	
						66.2	2.016	1.009	CT	1.149	0.25	21.50	1978 MPC01	
						T851	P	1.37	82	L-T	65.6	2.000	0.616	CT
66.5	2.000	1.020	N8	---	0.24							20.40	1974 90981	
67.0	2.000	1.020	N8	---	0.25							21.00	1974 90981	
67.0	1.500	0.709	CT	---	0.27							22.00	1982 NC003	
67.1	1.506	0.481	CT	0.768	0.24							20.90	1978 MPC01	
67.1	1.900	0.518	CT	0.765	0.24							21.10	1978 MPC01	
67.1	1.000	0.375	CT	---	0.26							21.90	1974 90981	
67.5	2.000	1.001	CT	1.018	0.35							25.20	1973 86429	
67.5	1.980	1.000	CT	1.004	0.33							24.60	1973 86429	
68.0	1.904	0.631	CT	0.767	0.28							23.60	1978 MPC01	
70.1	1.500	0.790	CT	---	0.29							24.00	1974 90981	
70.1	1.900	0.790	CT	---	0.26							22.80	1974 90981	
70.1	1.900	0.750	CT	---	0.25	22.00	1974 90981							
T851	P	1.37	82	L-T	65.6	2.000	1.002	CT	1.030	0.32	23.40	1973 86213		
						65.6	2.000	1.001	CT	0.975	0.29	22.50	1973 86213	
						65.6	2.000	1.002	CT	1.036	0.32	23.40	1973 86213	
						65.6	2.000	1.001	CT	0.981	0.29	22.40	1973 86213	
						65.6	2.000	1.001	CT	0.982	0.30	22.80	1973 86213	
						65.6	2.000	1.001	CT	0.982	0.30	22.80	1973 86213	

TABLE 7.5.2.1 (Con't)

CONDITION	ALUMINUM				2024				K(1C)				K(1C)				REFER
	--PRODUCT-- FORM	THICK (IN)	TEST SPECIMEN ORIENT	YIELD (KSI)	-----SPECIMEN-----				CRACK LENGTH (IN)	2.5* (IN)	K(1C)/TVS)**2 (IN)	K(1C) MEAN (KBI*SQRT IN)	STAN DEV	DATE			
					WIDTH (IN)	THICK (IN)	DESIGN	A									
															B		
T851	P	1.37	82	L-T	65.4	2.000	1.002	CT	1.033	0.32		23.40	23.0/	0.5	1973	86213	
T851	P	1.75 1.00 1.00 1.00	84	L-T	65.0 68.9 68.9 68.9	2.990 1.500 1.500 1.500	1.007 0.750 0.780 0.750	CT CT CT CT	1.650 0.726 0.739 0.742	0.32 0.22 0.23 0.24		23.30 20.60 20.80 21.30			1972 1973 1973 1973	84306 86213 86213 86213	
T851	P	3.00 3.00 3.00	200	L-T	58.6 58.6 58.6	1.500 1.500 1.500	0.750 0.750 0.750	CT CT CT	0.750 0.750 0.750	0.49 0.56 0.52		25.90 27.80 26.80			1972 1972 1972	83243 83243 83243	
T851	P	3.00 3.00 3.00	300	L-T	54.9 54.9 54.9	1.500 1.500 1.500	0.750 0.750 0.750	CT CT CT	0.750 0.750 0.750	0.60 0.62 0.59		26.80 27.30 26.60		0.4	1972 1972 1972	83243 83243 83243	
T851	P	1.37	R. T.	T-B	65.4	0.996	0.500	CT	0.488	0.28		22.90			1978	MP001	
T851	P	1.37	86	T-B	65.4	1.000	0.500	CT	0.510	0.30		22.90			1973	86213	
T851	P	1.37 1.37 1.37	88	T-B	65.5 65.5 65.5	1.000 1.000 1.000	0.500 0.500 0.500	CT CT CT	0.515 0.496 0.511	0.24 0.29 0.25		20.40 20.60 20.80		0.2	1973 1973 1973	86213 86213 86213	
T851	P	1.39 1.39	- 320	T-L	79.0 79.0	3.000 3.000	1.390 1.390	NB NB	1.490 1.480	0.20 0.20		22.10 22.20		0.1	1971 1971	84288 84288	
T851	P	1.39 1.39	- 112	T-L	69.2 69.2	3.000 3.000	1.390 1.390	NB NB	1.520 1.570	0.24 0.27		21.30 22.70		1.0	1971 1971	84288 84288	
T851	P	3.00	- 65	T-L	66.5	1.500	0.750	CT	0.750	0.31		23.30			1972	83243	
T851	P	3.00 3.00	0	T-L	65.5 65.5	1.500 1.500	0.750 0.750	CT CT	0.750 0.750	0.30 0.25		22.90 20.80		1.5	1972 1972	83243 83243	
T851	P	4.00 4.00 3.00 3.00	R. T.	T-L	61.5 61.5 63.5 63.5	2.000 2.000 1.500 1.500	1.020 1.020 0.750 0.750	NB NB CT CT	----- ----- 0.750 0.750	0.26 0.26 0.32 0.24		19.80 19.90 22.60 22.20			1974 1974 1972 1972	90981 90981 83243 83243	

TABLE 7.5.2.1 (Con't)

[illegible]

TABLE 7.5.2.1 (Con't)

CONDITION	ALUMINUM				2024				K(1C)						
	--PRODUCT--		TEST SPECIMEN ORIENT	YIELD STRENGTH (KSI)	-----SPECIMEN-----		CRACK LENGTH (IN)	2.5* (K(1C)/(TVS))*2 (IN)	K(1C) MEAN (KBI*80RT IN)	K(1C) STAN DEV	DATE	REFER			
	FORM	THICK (IN)			WIDTH (IN)	THICK (IN)							DESIGN		
					A	B									
T851	P	1.37	R. T.	T-L	65.0	3.024	1.392	NB	1.512	0.27	22.00	1978	MPC01		
		1.37			65.0	3.000	1.392	NB	1.565	0.23	19.80	1973	86213		
		0.75			65.2	1.494	0.761	CT	0.792	0.21	19.10	1978	MPC01		
		1.37			65.5	3.018	1.400	NB	1.539	0.22	20.20	1978	MPC01		
		1.37			65.5	2.000	0.999	CT	1.097	0.21	19.10	1973	86213		
		1.37			65.5	2.000	0.999	CT	1.065	0.19	18.20	1973	86213		
		1.37			65.5	3.000	1.400	NB	1.520	0.23	19.80	1973	86213		
		1.37			65.6	2.978	1.385	NB	1.489	0.36	25.40	1978	MPC01		
		1.00			65.7	2.016	0.987	CT	1.109	0.24	21.00	1978	MPC01		
		0.62			65.7	1.498	0.616	CT	0.779	0.19	18.90	1978	MPC01		
		0.50			65.9	1.490	0.481	CT	0.760	0.21	19.30	1978	MPC01		
		0.37			66.6	1.000	0.375	CT	-----	0.28	22.10	1974	90981		
		0.37			66.6	1.000	0.375	CT	-----	0.29	22.70	1974	90981		
		0.37			66.6	1.000	0.375	CT	-----	0.32	23.80	1974	90981		
		0.50			67.2	1.508	0.518	CT	0.784	0.21	19.50	1978	MPC01		
T851	P	1.37	82	T-L	64.4	2.000	1.000	CT	1.010	0.24	19.90	1973	86213		
		1.37			64.4	2.000	0.999	CT	1.021	0.24	20.00	1973	86213		
		1.37			64.4	2.000	1.000	CT	0.992	0.24	20.00	1973	86213		
		1.37			64.8	2.000	1.001	CT	1.058	0.25	20.40	1973	86213		
		1.37			64.8	2.000	1.002	CT	1.032	0.25	20.90	1973	86213		
		1.37			64.8	2.000	1.000	CT	1.049	0.24	20.10	20.2/	0.2	1973	86213
		T851	P	1.00	84	T-L	67.6	1.500	0.750	CT	0.740	0.20	18.90	1973	86213
				1.00			67.6	1.490	0.749	CT	0.754	0.19	18.80	1973	86213
				1.00			67.6	1.500	0.750	CT	0.749	0.18	18.30	18.7/	0.3
		T851	P	3.00	200	T-L	58.3	1.500	0.750	CT	0.750	0.32	20.70	1972	83243
				3.00			58.3	1.500	0.750	CT	0.750	0.38	22.80	1972	83243
				3.00			58.3	1.500	0.750	CT	0.750	0.35	21.80	21.8/	1.1
		T851	P	3.00	300	T-L	54.1	1.500	0.750	CT	0.750	0.40	21.70	1972	83243
				3.00			54.1	1.500	0.750	CT	0.750	0.42	22.30	22.0/	0.4
		T851	P	3.00	R. T.	8-T	64.0	2.500	0.750	CT	-----	24.00	1974	90011	

TABLE 7.5.2.1 (Con't)

ALUMINUM														K(1C)	
CONDITION	--PRODUCT--		TEST SPECIMEN ORIENT	YIELD STRENGTH (KSI)	-----SPECIMEN-----			CRACK LENGTH (IN)	2.5* K(1C)/TYS)**2 (KSI*SQRT IN)	K(1C) MEAN DEV (KSI*SQRT IN)	K(1C) STAN DEV	DATE	REFER		
	FORM	THICK (IN)			TEMP (F)	WIDTH (IN)	THICK (IN)							DESIGN	
															W
T851	P	1.37	86	S-T	64.2	1.000	0.500	CT	0.499	0.15	15.70	1973	86213		
		1.37			64.2	1.000	0.500	CT	0.510	0.16	16.00	1973	86213		
		1.37			64.2	1.000	0.500	CT	0.511	0.18	17.00	1973	86213		
T851	P	1.37	88	S-T	64.1	1.000	0.500	CT	0.502	0.15	15.90	1973	86213		
		1.37			64.1	1.000	0.500	CT	0.479	0.15	15.80	1973	86213		
		1.37			64.1	1.000	0.500	CT	0.480	0.15	15.80	1973	86213		
T851	P	1.37	88	S-L	64.1	1.000	0.501	CT	0.506	0.18	17.20	1973	86213		
		1.37			64.1	1.000	0.500	CT	0.496	0.16	16.30	1973	86213		
		1.37			64.1	1.000	0.501	CT	0.478	0.15	15.60	1973	86213		
T8510	E	4.50	R.T.	L-T	58.5	4.023	2.000	CT	2.132	0.78	33.10	1978	MPC01		
		4.00			61.8	3.981	1.838	CT	2.110	0.57	30.20	1978	MPC01		
		2.76			63.2	4.018	2.000	CT	2.009	0.46	27.80	1978	MPC01		
T8510	E	4.50	R.T.	T-L	58.9	5.042	2.500	CT	2.622	0.21	17.50	1978	MPC01		
		4.00			60.5	5.034	2.499	CT	2.527	0.16	16.30	1978	MPC01		
		2.76			61.8	4.018	1.999	CT	2.049	0.15	15.60	1978	MPC01		
T8510	E	4.50	R.T.	S-L	56.6	3.022	1.500	CT	1.541	0.21	16.50	1978	MPC01		
		4.00			58.2	2.998	1.498	CT	1.529	0.19	16.50	1978	MPC01		
		2.76			59.6	2.018	0.999	CT	0.989	0.13	14.10	1978	MPC01		
T8511	E	3.50	R.T.	L-T	66.5	1.996	1.000	CT	0.978	0.32	24.40	1978	MPC01		
		3.50			66.5	2.004	1.000	CT	0.982	0.30	23.80	1978	MPC01		
T8511	E	3.50	R.T.	T-L	61.8	2.015	1.000	CT	1.048	0.15	16.00	1978	MPC01		
		3.50			61.8	1.980	1.000	CT	1.010	0.15	16.00	1978	MPC01		
T8511	E	3.50	R.T.	S-T	61.6	2.014	1.001	CT	1.007	0.16	16.70	1978	MPC01		
		3.50			61.6	2.014	1.001	CT	1.007	0.16	16.70	1978	MPC01		

TABLE 7.5.2.1 (Con't)

CONDITION	ALUMINUM				2024		K (IC)		K (IC) STAN K (IC) MEAN DEV (KSI*SQRT IN)	DATE	REFER	
	--PRODUCT-- FORM	THICK (IN)	TEST TEMP (F)	SPECIMEN ORIENT	YIELD STRENGTH (KSI)	-----SPECIMEN-----		CRACK LENGTH (IN)				
						WIDTH (IN)	THICK (IN)					A
T852	F	4.75	84	L-S	64.4	2.000	0.997	CT	0.923	0.41	26.20	1973 86213
T852	F	5.00	R.T.	L-T	55.1	3.000	1.502	NB	1.400	0.56	26.10	1970 77720
		55.1			3.000	1.504	NB	1.542	0.66	28.30	1970 77720	
		55.1			3.000	1.503	NB	1.395	0.60	27.00	1970 77720	
		56.1			4.000	2.001	NB	2.008	0.76	30.80	1970 77720	
		56.1			4.000	1.999	NB	1.925	0.63	28.20	1970 77720	
		56.1			4.000	2.002	NB	2.202	0.75	30.80	1970 77720	
		58.0			2.900	1.294	CT	1.324	0.71	30.90	1973 89836	
		58.0			2.490	1.250	CT	1.279	0.55	27.20	1973 89836	
		58.0			2.490	1.247	CT	1.251	0.48	25.50	1973 89836	
		58.0			2.500	1.252	CT	1.295	0.99	36.90	1973 89836	
		58.0			2.500	1.252	CT	1.302	1.02	37.10	1973 89836	
		60.0			2.500	1.004	CT	1.265	0.99	37.80	1973 89836	
T852		2.00	1.500	0.752	NB	0.667	0.36	24.30	1970 77720			
		64.6	1.500	0.752	NB	0.707	0.30	22.60	1970 77720			
		64.6	1.500	0.751	NB	0.770	0.40	25.90	1970 77720			
		65.0	2.500	1.250	CT	-----	0.77	36.00	1974 90011			
		65.0	2.500	1.250	CT	-----	0.81	37.00	1974 90011			
		65.0	2.500	1.250	CT	-----	0.81	37.00	1974 90011			
		65.4	3.000	1.500	NB	1.445	0.49	28.90	1970 77720			
		65.4	3.000	1.500	NB	1.482	0.36	25.00	1970 77720			
		65.4	3.000	1.502	NB	1.645	0.46	28.10	1970 77720			
		66.7	2.000	1.007	NB	0.950	0.27	21.90	1970 77720			
		66.7	2.000	0.999	NB	0.940	0.29	22.60	1970 77720			
		66.7	1.990	1.000	NB	0.935	0.34	24.60	29 2/ 5.2			
T852	F	7.00	82	L-T	49.5	1.500	0.751	CT	0.706	0.70	1973 86213	
	7.00			58.6	1.490	0.758	CT	0.719	0.28	19.70	23.0/ 4.6	
T852	F	7.00	83	L-T	58.6	1.500	0.753	CT	0.720	0.27	19.30	1973 86213
T852	F	5.00	84	L-T	61.9	1.490	0.750	CT	0.735	0.31	21.80	1973 86213
	4.75			64.4	2.000	0.999	CT	1.061	0.34	23.60	22.7/ 1.3	1973 86213
T852	F	3.00	265	L-T	---	2.500	1.250	CT	-----	-----	31.00	1974 90011
	5.00			65.0	2.490	1.248	CT	1.485	0.90	38.90	35.0/ 5.6	1973 86210
T852	F	4.75	84	T-S	65.2	2.000	0.997	CT	0.937	0.14	15.20	1973 86213



TABLE 7.5.2.1 (Con't)

CONDITION	ALUMINUM						2024		K(1C)			K(1C) STAN K(1C) MEAN DEV (KSI*SQRT IN)	DATE	REFER
	--PRODUCT--		TEST SPECIMEN ORIENT	YIELD STRENGTH (KSI)	-----SPECIMEN-----		CRACK LENGTH (IN)	2.5* (K(1C)/TVS)**2 (IN)						
	FORM	THICK (IN)			THICK (IN)	DESIGN								
A														
B														
M														
T852	F	5.00	R.T.	T-L	56.7	3.000	1.502	NB	1.507	0.25	17.80		1970	77720
		5.00			56.7	3.000	1.500	NB	1.422	0.23	17.30		1970	77720
		5.00			56.7	3.000	1.501	NB	1.553	0.24	17.60		1970	77720
		6.00			57.8	4.000	2.005	NB	2.005	0.17	15.10		1970	77720
		6.00			57.8	3.990	2.003	NB	2.035	0.25	18.10		1970	77720
		6.00			57.8	3.990	2.003	NB	2.035	0.25	18.20		1973	86213
		6.00			57.8	4.000	2.005	NB	2.005	0.17	15.20		1973	86213
		3.00			58.0	2.000	1.000	CT	-----	0.30	20.00		1974	90011
		3.00			58.0	2.000	1.000	CT	-----	0.33	21.00		1974	90011
		3.00			58.0	2.000	1.000	CT	-----	0.33	21.00		1974	90011
		2.00			63.8	1.500	0.754	NB	0.697	0.34	23.50		1970	77720
		2.00			63.8	1.500	0.752	NB	0.667	0.36	24.10		1970	77720
		2.00			63.8	1.500	0.749	NB	0.763	0.24	19.80		1970	77720
		3.00			69.0	2.000	1.001	NB	1.020	0.15	16.90		1970	77720
		3.00			69.0	1.990	0.999	NB	1.010	0.15	16.70		1970	77720
		3.00			69.0	2.000	1.000	NB	0.909	0.20	19.40	18.9/ 2.6	1970	77720
T852	F	7.00	82	T-L	59.0	1.500	0.750	CT	0.719	0.47	25.50		1973	86213
T852	F	7.00	83	T-L	53.2	1.500	0.754	CT	0.757	0.39	21.00		1973	86213
		7.00			59.5	1.500	0.753	CT	0.767	0.21	17.20	19.1/ 2.7	1973	86213
T852	F	5.00	84	T-L	62.9	1.490	0.750	CT	0.752	0.19	15.40		1973	86213
T852	F	3.00	265	T-L	-----	2.500	1.250	CT	-----	-----	24.00		1974	90011
T852	F	6.00	R.T.	S-T	53.9	1.400	0.700	NB	0.700	0.27	17.70		1972	82675
		6.00			53.9	1.400	0.700	NB	0.700	0.26	17.50	17.6/ 0.1	1972	82675
T852	F	7.00	83	S-T	50.1	1.000	0.506	CT	0.495	0.40	20.00		1973	86213
		7.00			50.5	1.000	0.499	CT	0.481	0.32	18.00		1973	86213
		7.00			57.2	1.000	0.505	CT	0.494	0.23	17.40	18.5/ 1.4	1973	86213
T852	F	5.00	84	S-T	57.6	0.990	0.501	CT	0.542	0.23	17.60		1973	86213
T852	F	6.00	R.T.	S-L	53.9	1.000	0.500	NB	0.512	0.23	16.40		1970	77720
		6.00			53.9	1.000	0.500	NB	0.505	0.19	14.80		1970	77720
		6.00			53.9	1.000	0.500	NB	0.507	0.26	17.30		1970	77720
		5.00			54.5	1.000	0.500	NB	0.490	0.22	16.00		1970	77720

TABLE 7.5.2.1 (Con't)

CONDITION	--PRODUCT--			TEST SPECIMEN ORIENT	YIELD STRENGTH (KSI)	ALUMINUM			2024			K(1C)			DATE	REFER
	FORM	THICK (IN)	TEMP (F)			-----SPECIMEN-----			CRACK LENGTH (IN)	2.9* K(1C)/TVB**2 (1.1)	K(1C) MEAN DEV (KSI*SQRT IN)					
						WIDTH (IN)	THICK (IN)	DESIGN								
T852	F	5.00	R. T.	S-L	54.5	1.000	0.500	NB	0.473	0.21	15.80	1970	77720			
		4.00				0.500	0.250	NB	0.267	0.19	15.00	1970	77720			
		4.00				0.500	0.250	NB	0.272	0.17	15.80	1970	77720			
		4.00				0.500	0.250	NB	0.298	0.18	16.10	15.9/	0.8	1970	77720	
T852	F	4.75	84	S-L	60.9	2.000	0.997	CT	0.946	0.17	16.10	1973	86213			

TABLE 7.5.2.2

CONDITION	ALUMINUM		2024		K(C)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
	--PRODUCT-- FORM THICK TEMP OR (IN) (F)	TEST SPEC (F)	YIELD STR (KSI)	CRACK LENGTH CROSS STRESS		K (APP) STAN K (APP) MEAN DEV (KSI*SQRT IN)	K (C) STAN K (C) MEAN DEV (KSI*SQRT IN)	REFER																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
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TABLE 7.5.2.2 (Con't)

ALUMINUM										2024		K(C)	
CONDITION	--PRODUCT-- FORM	THICK (IN)	TEST SPEC TEMP OR (F)	YIELD STR (KSI)	--SPECIMEN--		CRACK LENGTH CROSS STRESS			K(AFP) STAN		K(C) STAN	
					WIDTH (IN)	THICK (IN)	INIT (IN)	FINAL (IN)	ONSET (KSI)	MAX (KSI)	K(AFP) (KSI)	MEAN DEV (KSI)	K(C) (KSI)
					W	B	2A(O)	2A(F)	S(O)	S(MAX)			
BUCKLING OF CRACK EDGES RESTRAINED													
T3	S	0.08	R.T.	53.3	20.000	0.080	7.350	8.950	20.80	24.80	92.09	106.46*	1966 67821
		0.08		53.3	20.000	0.080	3.090	6.450	21.30	29.00	85.44	98.71*	1966 67821
		0.08		53.3	20.000	0.080	3.310	4.950	29.20	34.20	79.33	99.14*	1966 67821
		0.08		53.3	20.000	0.080	1.270	1.900	46.46	48.00	67.96*	83.39*	1966 67821
		0.08		53.3	20.000	0.080	0.700	1.440	51.90	51.80	54.36*	85.6/ 6.4	1966 67821
T3	S	0.12	R.T.	53.8	4.000	0.122	2.390	3.100	---	20.30	51.17*	76.14*	1970 78982
		0.12		53.8	4.000	0.123	1.190	1.800	---	35.20	50.93*	67.88*	1970 78982
		0.12		53.8	4.000	0.123	2.340	2.900	---	20.50	50.46*	67.62*	1970 78982
		0.12		53.8	4.000	0.123	0.390	1.000	---	46.00	36.22*	59.98*	1970 78982
		0.12		53.8	4.000	0.123	2.400	---	---	44.90	113.71*	---	1970 78982
		0.12		53.8	4.000	0.123	1.200	1.900	---	36.60	53.23*	73.79*	1970 78982
T3	S	0.12	R.T.	53.8	8.000	0.123	0.800	1.900	---	46.40	52.34*	83.07*	1970 78982
		0.12		53.8	8.000	0.124	2.600	3.300	---	34.30	74.21*	87.46*	1970 78982
		0.12		53.8	8.000	0.123	4.700	4.900	---	20.50	71.70*	75.21*	1970 78982
		0.12		53.8	8.000	0.123	4.740	5.260	---	19.60	69.20*	78.70*	1970 78982
		0.12		53.8	8.000	0.123	0.800	2.000	---	46.40	52.34*	85.56*	1970 78982
T3	S	0.12	R.T.	53.8	24.000	0.123	14.350	16.200	---	13.40	95.15	111.14*	1970 78982
		0.12		53.8	24.000	0.123	14.390	17.800	---	13.10	81.20	110.25*	1970 78982
		0.12		53.8	24.000	0.123	2.400	3.250	---	44.60	87.13*	101.93*	1970 78982
		0.12		53.8	24.000	0.123	2.400	4.400	---	44.60	87.13*	119.74*	1970 78982
		0.12		53.8	24.000	0.123	7.650	11.600	---	29.20	108.07	146.35*	1970 78982
		0.12		53.8	24.000	0.123	6.220	11.800	---	28.00	91.33	93.9/11.1	1970 78982
T3	S	0.06	R.T.	43.4	6.000	0.060	2.000	2.350	---	30.25	57.62*	64.31*	1966 86734
T3	S	0.06	R.T.	43.4	9.000	0.060	3.000	3.600	---	30.50	71.15*	80.64*	1966 86734
T3	S	0.06	R.T.	43.4	15.000	0.060	5.000	5.800	---	28.00	84.32*	93.27*	1966 86734
T3	S	0.06	R.T.	43.4	18.000	0.060	6.000	7.200	---	27.50	90.72*	102.82*	1966 86734
T3	S	0.06	R.T.	43.4	21.000	0.060	7.000	8.600	---	27.40	97.63*	112.58*	1966 86734

\*NOTE- NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STD. DEV.

TABLE 7.5.2.2 (Con't)

CONDITION	ALUMINUM		2024		K(C)																																																																																																																																																																																																						
	--PRODUCT-- FORM	THICK (IN)	TEST SPEC OR (F)	YIELD STR (KSI)	CRACK LENGTH				GROSS STRESS		K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (KSI*SQRT IN)	K(C) STAN K(APP) MEAN DEV (K

\*NOTE- NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STD. DEV.

TABLE 7.5.2.2 (Con't)

CONDITION	ALUMINUM				2024				K(C)				
	--PRODUCT-- FORM	THICK (IN)	TEST SPEC OR (F)	YIELD STR (KSI)	CRACK LENGTH CROSS STRESS				K(C)				
					---SPECIMEN---		ONSET		K(APP) MEAN DEV		K(C) MEAN DEV		
					WIDTH (IN)	THICK (IN)	INIT (IN)	FINAL (IN)	MAX (KSI)	S(O)	S(MAX)	(KSI*SQRT IN)	STAN DEV (KSI)
	W	B	2A(O)	2A(F)	S(O)	S(MAX)							
BUCKLING OF CRACK EDGES NOT RESTRAINED													
T3	S	0.09 0.09 0.09	R. T. L-T	51.1 51.1 51.1	3.000 3.000 3.000	0.092 0.092 0.092	1.210 1.190 1.240	2.002 1.992 2.215	---	30.30 30.50 29.90	46.53* 46.27* 46.76*	76.06*	1973 86213
												76.02*	1973 86213
												88.16*	1973 86213
T3	S	0.12 0.12 0.12 0.12 0.12 0.12 0.12	R. T. L-T	53.7 53.7 53.7 53.8 53.8 53.8 53.8	3.000 3.000 3.000 3.000 3.000 3.000 3.000	0.124 0.124 0.124 0.127 0.126 0.129 0.130	1.143 1.223 1.123 1.167 1.140 1.190 1.165	2.080 2.040 1.940 1.830 1.760 1.790 1.780	17.10 17.40 19.90 16.30 15.70 15.00 16.70	32.40 31.20 33.30 32.30 33.10 31.60 32.30	47.73* 48.26* 48.46* 48.29* 48.70* 47.94* 48.23*	86.04*	1973 86213
												80.47*	1973 86213
												80.08*	1973 86213
T3	S	0.12 0.12 0.12	R. T. L-T	56.0 56.9	4.000 4.000	0.129 0.129	1.645 1.627	2.749 2.678	---	31.40 31.50	56.46* 56.18*	94.95*	1973 86213
												91.72*	1973 86213
T3	S	0.16 0.16 0.16 0.16 0.16 0.16 0.16	R. T. L-T	50.4 50.4 50.4 50.6 50.6 50.6 53.8	3.000 3.000 3.000 3.000 3.000 3.000 3.000	0.160 0.161 0.162 0.163 0.163 0.163 0.163	1.140 1.163 1.162 1.163 1.255 1.150 1.140	1.780 1.820 1.850 1.780 1.710 1.760 1.840	15.90 16.90 17.80 17.70 15.70 17.20 16.60	31.10 30.40 30.50 30.50 28.70 31.20 32.80	45.76* 45.34* 45.49* 45.49* 45.26* 46.19* 48.26*	67.35*	1973 86213
												67.53*	1973 86213
												67.08*	1973 86213
T3	S	0.16 0.16	R. T. L-T	50.8 50.8	29.990 30.010	0.163 0.163	15.000 15.000	18.360 18.680	---	20.70 20.60	119.51* 118.90*	146.96*	1962 62308
												151.24*	1962 62308
T3	P	0.25 0.25	R. T. L-T	53.6 53.6	15.000 15.000	0.253 0.253	7.500 7.500	11.440 11.250	---	21.50 21.30	87.76* 86.94	151.02*	1966 86734
												144.74*	1966 86734
T3	P	0.50 0.50	R. T. L-T	54.8 54.8	7.960 8.000	0.509 0.500	4.820 2.600	5.000 2.770	12.80 21.00	18.00 30.60	64.99* 66.20*	67.93*	1970 78982
												69.00*	1970 78982

NOTE- NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STD. DEV.

TABLE 7.5.2.2 (Con't)

CONDITION	ALUMINUM				2024				K(C)									
	--PRODUCT-- FORM	THICK (IN)	TEST SPEC OR TEMP (F)	YIELD STR (KSI)	--SPECIMEN--				CRACK LENGTH GROSS STRESS									
					WIDTH (IN)	THICK (IN)	B	2A(O)	2A(F)	S(O)	S(MAX)	K(APP) (KSI+80RT IN)	K(C) (KSI+80RT IN)	STAN DEV	K(C) (KSI+80RT IN)	STAN DEV	K(C) (KSI+80RT IN)	REFER
BUCKLING OF CRACK EDGES NOT RESTRAINED																		
T3	P	0.50	R. T.	L-T	54.8	8.050	0.509	4.850	4.900	13.20	18.00	64.98*	65.76*	1970	78982			
T3	P	0.50	R. T.	L-T	55.4	15.000	0.517	7.500	10.080	---	18.70	76.33	106.01*	1966	86734			
T3	P	0.50	R. T.	L-T	54.8	24.000	0.509	7.250	12.000	17.20	26.80	95.89	138.37*	1970	78982			
T3	P	0.50	R. T.	L-T	54.8	24.150	0.509	7.200	11.500	18.50	27.60	98.26	137.01*	1970	78982			
T3	P	0.50	R. T.	L-T	54.8	24.150	0.509	14.100	17.400	---	15.50	93.54	124.29*	1970	78982			
T3	P	0.50	R. T.	L-T	54.8	24.150	0.509	2.300	4.800	25.70	42.80	81.81*	95.9/ 2.4	1970	78982			
T3	S	0.06	R. T.	T-L	44.4	2.000	0.064	0.625	1.080	32.30	33.20	34.99*	53.17*	1973	86213			
T3	S	0.06	R. T.	T-L	44.4	2.000	0.063	0.626	1.030	28.30	34.10	36.01*	52.21*	1973	86213			
T3	S	0.06	R. T.	T-L	46.2	2.000	0.064	0.620	0.980	---	33.90	35.59*	49.63*	1973	86213			
T3	S	0.06	R. T.	T-L	47.8	2.000	0.061	0.623	0.900	---	35.40	37.24*	48.27*	1973	86213			
T3	S	0.06	R. T.	T-L	47.8	2.000	0.061	0.621	1.040	34.40	35.20	36.95*	54.38*	1973	86213			
T3	S	0.06	R. T.	T-L	47.8	2.000	0.062	0.625	1.050	28.00	34.70	36.57*	54.09*	1973	86213			
T3	S	0.06	R. T.	T-L	46.0	15.810	0.064	6.010	---	---	22.50	76.02	---	1973	86213			
T3	S	0.06	R. T.	T-L	46.0	15.810	0.063	4.000	---	---	29.10	75.96*	---	1973	86213			
T3	S	0.06	R. T.	T-L	46.0	15.810	0.064	3.010	4.110	---	32.80	72.76*	86.99*	1973	86213			
T3	S	0.06	R. T.	T-L	46.0	15.820	0.064	1.020	1.780	---	43.00	54.57*	72.47*	1973	86213			
T3	S	0.06	R. T.	T-L	44.0	24.000	0.063	8.000	9.600	---	27.80	105.90*	120.02*	1966	86734			
T3	S	0.06	R. T.	T-L	44.0	24.000	0.063	8.000	9.600	---	28.40	108.18*	122.61*	1966	86734			
T3	S	0.06	R. T.	T-L	44.0	24.000	0.063	8.000	9.600	---	27.20	103.61*	117.43*	1966	86734			
T3	S	0.06	R. T.	T-L	44.0	24.000	0.063	8.000	9.600	---	27.90	106.28*	120.45*	1966	86734			
T3	S	0.09	R. T.	T-L	45.3	3.000	0.093	1.190	2.480	---	28.70	43.54*	109.23*	1973	86213			
T3	S	0.09	R. T.	T-L	45.3	3.000	0.093	1.200	2.336	---	28.60	43.66*	93.86*	1973	86213			
T3	S	0.09	R. T.	T-L	45.3	3.000	0.092	1.220	2.372	---	28.00	43.26*	95.11*	1973	86213			
T3	S	0.12	R. T.	T-L	45.7	3.000	0.124	1.130	2.250	15.20	30.50	44.60*	92.69*	1973	86213			
T3	S	0.12	R. T.	T-L	45.7	3.000	0.124	1.178	---	16.60	29.30	44.13*	---	1973	86213			
T3	S	0.12	R. T.	T-L	45.7	3.000	0.124	1.148	---	16.90	29.80	44.06*	---	1973	86213			
T3	S	0.12	R. T.	T-L	46.0	3.000	0.127	1.180	2.250	14.80	28.50	42.98*	86.61*	1973	86213			

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TABLE 7.5.2.2 (Con't)

ALUMINUM																	2024		K(C)	
CONDITION	--PRODUCT-- FORM	THICK (IN)	TEST SPEC TEMP (F)	YIELD STR (KSI)	---SPECIMEN---			CRACK LENGTH				CROSS STRESS			K(APP) STAN		K(C) (KSI*SQRT IN)	K(C) STAN MEAN DEV	REFER	
					WIDTH (IN)	THICK (IN)	B	INIT (IN)	FINAL (IN)	ONSET (KSI)	MAX (KSI)	K(APP) (KSI)	MEAN (KSI)	DEV (KSI)						
BUCKLING OF CRACK EDGES NOT RESTRAINED																				
T3	S	0.12	R. T.	T-L	46.0	3.000	0.127	1.233	2.200	13.70	27.70	43.11*	80.74*	1973 86213						
		0.12			46.0	3.000	0.128	1.137	2.160	15.00	29.50	43.30*	83.28*	1973 86213						
		0.12			48.1	3.000	0.129	1.110	2.190	17.10	30.10	43.47*	87.03*	1973 86213						
		0.12			48.1	3.000	0.129	1.107	2.110	16.90	30.10	43.37*	81.75*	1973 86213						
T3	S	0.16	R. T.	T-L	43.2	3.000	0.161	1.183	2.110	14.70	27.50	41.52*	74.69*	1973 86213						
		0.16			43.2	3.000	0.161	1.260	2.120	15.50	26.00	41.15*	71.15*	1973 86213						
		0.16			43.2	3.000	0.162	1.160	2.050	15.20	27.40	40.82*	71.18*	1973 86213						
		0.16			43.5	3.000	0.162	1.137	2.090	14.40	28.10	41.24*	75.18*	1973 86213						
		0.16			43.5	3.000	0.162	1.202	2.110	15.90	27.00	41.26*	73.33*	1973 86213						
		0.16			43.5	3.000	0.162	1.242	2.070	14.20	26.10	40.86*	68.80*	1973 86213						
		0.16			43.6	3.000	0.162	1.255	2.240	15.60	27.70	43.68*	83.47*	1973 86213						
		0.16			43.6	3.000	0.162	1.117	2.110	16.90	30.30	43.93*	82.29*	1973 86213						
		0.16			43.6	3.000	0.162	1.130	2.160	15.70	30.20	44.16*	85.23*	1973 86213						
T3	S	0.16	R. T.	T-L	43.4	30.000	0.164	13.000	18.900	---	18.20	103.06*	133.83*	1966 86734						
		0.16			43.4	30.000	0.165	13.000	18.450	---	18.20	103.06*	129.94*	1966 86734						
T3	S	0.09	84	T-L	44.3	16.000	0.095	4.000	6.420	18.10	29.80	77.71*	105.29*	1973 86213						
		0.09			44.3	16.000	0.095	4.000	6.530	15.80	29.30	76.41*	104.82*	1973 86213						
T3	P	0.25	R. T.	T-L	47.3	15.000	0.255	7.500	9.950	---	19.40	79.19*	107.98*	1966 86734						
		0.25			47.3	15.000	0.254	7.500	9.650	---	19.30	78.78*	103.08*	1966 86734						
T3	P	0.50	R. T.	T-L	49.2	15.000	0.519	7.500	10.400	---	16.20	66.12	96.20*	1966 86734						
		0.50			49.2	15.000	0.516	7.500	10.350	---	15.70	64.08	92.54*	1966 86734						
BUCKLING OF CRACK EDGES NOT RESTRAINED																				
T351	P	0.25	R. T.	L-T	55.4	4.000	0.246	1.733	2.627	---	29.00	54.25*	82.17*	1973 86213						
		0.25			55.8	4.000	0.247	1.727	2.06	---	29.80	55.60*	88.08*	1973 86213						
T351	P	0.50	R. T.	L-T	49.0	4.000	0.498	1.789	---	---	28.00	53.70*	---	1966 86734						

\*NOTE- NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STD. DEV

\*NOTE- NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STD DEV



TABLE 7.5.2.2 (Con't)

CONDITION		ALUMINUM		2024		K(C)									
		---PRODUCT---		CRACK LENGTH CROSS STRESS		K(APP) STAN									
		FORM	THICK (IN)	TEST SPEC OR TEMP (F)	YIELD STR (KSI)	WIDTH (IN)	THICK (IN)	INIT (IN)	FINAL (IN)	ONSET (KSI)	MAX (KSI)	K(APP) (KSI+SORT IN)	MEAN DEV (KSI+SORT IN)	K(C) MEAN DEV (KSI+SORT IN)	BTAN
BUCKLING OF CRACK EDGES NOT RESTRAINED															
T351	P	0.50	R.T.	L-T	49.0	4.000	0.503	1.880	---	---	28.00	55.95*	---	---	1966 86734
		0.50			54.0	4.000	0.507	1.673	---	---	15.80	30.30	55.17*	---	1973 86213
		0.50			54.3	4.000	0.508	1.653	---	---	15.70	30.70	55.40*	---	1973 86213
T351	P	0.50	R.T.	L-T	49.0	12.000	0.441	7.750	---	---	18.00	86.42*	---	---	1966 86734
		0.50			49.0	12.000	0.444	5.000	---	---	29.10	91.56*	---	---	1966 86734
		0.50			49.0	12.000	0.448	9.620	---	---	9.00	63.19*	---	---	1966 86734
T351	P	1.00	R.T.	L-T	58.2	20.000	1.023	4.850	7.350	---	28.00	80.21	105.89	---	1973 86213
		1.00			58.2	20.000	1.023	2.610	6.250	---	35.60	72.85	118.78*	---	1973 86213
		1.00			58.2	20.000	1.023	7.000	10.000	---	23.00	82.59	78.6/ 5.1	108.40	107.1/ 1.8
T351	P	0.25	R.T.	T-L	47.1	4.000	0.255	1.790	2.300	---	23.80	45.69*	63.28*	---	1973 86213
		0.25			47.1	4.000	0.255	1.860	2.240	---	22.90	45.35*	53.80*	---	1973 86213
T351	P	0.50	R.T.	T-L	48.6	14.970	0.507	4.970	7.900	---	23.80	71.41	102.00*	---	1973 86213
		0.50			48.6	15.000	0.507	5.000	8.600	---	23.50	70.77	71.1/ 0.5	109.59*	---
T351	P	1.00	R.T.	T-L	52.0	20.000	1.023	4.850	8.500	---	24.00	68.75	98.96*	---	1973 86213
		1.00			52.0	20.000	1.023	7.000	10.100	---	19.90	71.46	94.63	---	1973 86213
		1.00			52.0	20.000	1.023	2.610	6.450	---	30.90	63.23	67.8/ 4.2	105.18*	---
BUCKLING OF CRACK EDGES NOT RESTRAINED															
T36	S	0.06	R.T.	L-T	63.6	2.000	0.062	0.625	1.160	---	41.30	43.33*	71.21*	---	1973 86213
		0.06			63.6	2.000	0.062	0.625	1.250	---	41.90	44.16*	78.77*	---	1973 86213
T36	S	0.06	R.T.	T-L	56.4	2.000	0.062	0.625	1.280	---	37.40	39.42*	72.45*	---	1973 86213
		0.06			56.4	2.000	0.062	0.625	1.220	---	37.50	39.53*	68.46*	---	1973 86213

\*NOTE- NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STD DEV



TABLE 7.5.2.2 (Con't)

CONDITION	--PRODUCT--				YIELD STR (KSI)	ALUMINUM					2024					K(C)					
	FORM	THICK (IN)	TEST TEMP (F)	SPEC OR		---SPECIMEN---					CRACK LENGTH CROSS STRESS					K(APP) STAN					
						W	WIDTH (IN)	THICK (IN)	B	2A(O)	2A(F)	INIT (IN)	FINAL (IN)	ONSET (KSI)	MAX (KSI)	K(APP) (KSI#SORT IN)	STAN DEV (KSI#SORT IN)	K(C) MEAN DEV (KSI#SORT IN)	K(C) STAN		
BUCKLING OF CRACK EDGES NOT RESTRAINED																					
T4	S	0.04	R. T.	T-L	37.7	7.500	0.040	0.040	5.350	---	---	---	---	12.13	53.30*	---	---	---	---	1966	86734
		0.04			37.7	7.500	0.040	0.040	4.000	---	---	---	---	16.00	49.03*	---	---	---	---	1966	86734
		0.04			37.7	7.500	0.040	0.040	5.000	---	---	---	---	12.14	48.11*	---	---	---	---	1966	86734
T4	S	0.06	R. T.	T-L	41.4	7.500	0.064	0.064	2.080	---	---	---	---	28.00	53.15*	---	---	---	---	1966	86734
		0.06			41.4	7.500	0.064	0.064	1.100	---	---	---	---	35.20	46.89*	---	---	---	---	1966	86734
		0.06			41.4	7.500	0.064	0.064	4.300	---	---	---	---	14.63	48.24*	---	---	---	---	1966	86734
		0.06			41.4	7.500	0.064	0.064	0.510	---	---	---	---	37.90	34.02*	---	---	---	---	1966	86734
		0.06			41.4	7.500	0.064	0.064	0.500	---	---	---	---	39.40	35.01*	---	---	---	---	1966	86734
		0.06			41.4	7.500	0.064	0.064	1.960	---	---	---	---	29.70	54.42*	---	---	---	---	1966	86734
		0.06			41.4	7.500	0.064	0.064	3.900	---	---	---	---	17.58	52.59*	---	---	---	---	1966	86734
		0.06			41.4	7.500	0.064	0.064	0.500	---	---	---	---	40.80	36.26*	---	---	---	---	1966	86734
		0.06			41.4	7.500	0.064	0.064	5.200	---	---	---	---	11.54	48.43*	---	---	---	---	1966	86734
		0.06			41.4	7.500	0.064	0.064	0.560	---	---	---	---	38.80	36.52*	---	---	---	---	1966	86734
		0.06			41.4	7.500	0.064	0.064	4.100	---	---	---	---	16.00	50.23*	---	---	---	---	1966	86734
		0.06			41.4	7.500	0.064	0.064	1.150	---	---	---	---	34.70	47.33*	---	---	---	---	1966	86734
BUCKLING OF CRACK EDGES NOT RESTRAINED																					
T6	S	0.06	R. T.	L-T	54.7	2.000	0.062	0.062	0.621	0.860	---	---	---	39.10	41.05*	---	---	---	---	1973	86213
		0.06			54.7	2.000	0.062	0.062	0.622	0.930	---	---	---	39.70	41.76*	---	---	---	---	1973	86213
		0.06			54.7	2.000	0.062	0.062	0.624	0.850	---	---	---	39.30	41.42*	---	---	---	---	1973	86213
T6	S	0.06	R. T.	T-L	54.2	2.000	0.062	0.062	0.622	0.790	---	---	---	35.80	37.66*	---	---	---	---	1973	86213
		0.06			54.2	2.000	0.062	0.062	0.623	0.840	---	---	---	36.00	37.87*	---	---	---	---	1973	86213
		0.06			54.2	2.000	0.062	0.062	0.622	0.880	---	---	---	35.10	36.92*	---	---	---	---	1973	86213

\*NOTE- NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STD. DEV.



TABLE 7.5.2.2 (Con't)

		ALUMINUM		2024		K(C)									
CONDITION	--PRODUCT-- FORM	THICK (IN)	TEST SPEC OR (F)	YIELD (KSI)	CRACK LENGTH CROSS STRESS										
					---SPECIMEN---		MAX								
					W (IN)	B (IN)	INIT (IN)	FINAL (IN)	ONSET (KSI)	S(MAX)					
BUCKLING OF CRACK EDGES RESTRAINED															
TB1	S	0.06	R. T.	T-L	62.0	15.000	0.060	5.000	6.000	---	18.90	56.92	64.51	1966	86734
TB1	S	0.06	R. T.	T-L	62.0	18.000	0.060	6.000	7.000	---	18.50	61.03	67.78	1966	86734
TB1	S	0.06	R. T.	T-L	62.0	21.000	0.060	7.000	8.200	---	17.60	62.71	69.85	1966	86734
TB1	S	0.06	R. T.	T-L	62.0	24.000	0.060	8.000	9.100	---	16.40	62.47	68.15	1966	86734
TB1	S	0.13	R. T.	T-L	64.1	5.990	0.126	2.020	---	---	23.32	44.70	59.50	1978	8D005
		0.13			64.1	6.000	0.126	1.980	---	---	22.88	43.30	55.70	1978	8D005
		0.13			64.1	6.010	0.126	2.060	---	---	23.24	45.10	56.80	1978	8D005
BUCKLING OF CRACK EDGES NOT RESTRAINED															
TB1	S	0.06	-	65	L-T	67.0	9.000	0.065	2.950	---	28.50	65.76	---	1966	86734
TB1	S	0.06	R. T.	L-T	68.0	2.000	0.062	0.625	1.040	---	36.00	37.94	55.61*	1973	86213
		0.06			68.0	2.000	0.061	0.619	1.065	---	36.10	37.82	56.99*	1973	86213
		0.06			68.0	2.000	0.061	0.619	0.940	---	38.20	40.02*	53.97*	1973	86213
		0.06			68.0	2.000	0.061	0.617	1.040	---	36.60	38.26	56.94*	1973	86213
		0.06			68.0	2.000	0.061	0.625	0.970	---	35.40	37.31	51.37*	1973	86213
		0.06			68.0	2.000	0.061	0.620	1.070	---	37.00	38.84	58.73*	1973	86213
		0.06			69.1	2.000	0.062	0.624	0.840	---	38.90	37.84	46.39*	1973	86213
		0.06			69.1	2.000	0.062	0.623	0.870	---	35.40	37.24	46.99*	1973	86213
		0.06			69.1	2.000	0.062	0.623	0.960	---	36.50	38.39	52.50*	1973	86213
TB1	S	0.06	R. T.	L-T	59.0	9.000	0.064	3.320	---	---	27.70	69.15	---	1966	86734
		0.06			59.0	9.000	0.065	3.380	---	---	28.70	72.54	70.8/ 2.4	1966	86734
TB1	S	0.06	R. T.	L-T	59.0	20.000	0.065	11.500	---	---	14.00	75.62	---	1966	86734
		0.06			59.0	20.000	0.065	11.250	---	---	14.70	77.58	76.6/ 1.4	1966	86734

TABLE 7.5.2.2 (Con't)

CONDITION	ALUMINUM		2024		K(C)																
	--PRODUCT-- FORM	THICK (IN)	TEST SPEC OR (F)	YIELD STR (KSI)	---SPECIMEN---		CRACK LENGTH		GROSS STRESS												
					WIDTH (IN)	THICK (IN)	INIT (IN)	FINAL (IN)	ONSET (KSI)	MAX (KSI)											
											W	B	2A(O)	2A(F)	S(O)	S(MAX)					
T81	S	0.12	R. T.	L-T	64.9	3.000	0.125	1.040	1.660	---	33.90	46.85	68.14*	1973	86213						
										64.9	3.000	0.125	1.000	1.580	---	33.70	45.39	64.53*	1973	86213	
										64.9	3.000	0.125	1.060	1.620	---	33.10	46.33	64.93*	1973	86213	
										65.2	3.000	0.123	1.070	1.680	---	32.70	46.06	66.53*	1973	86213	
										65.2	3.000	0.123	1.000	1.550	---	35.20	47.41*	66.20*	1973	86213	
										65.2	3.000	0.123	1.080	1.690	---	34.00	48.19*	69.61*	---	---	
T81	S	0.06	250	L-T	59.0	9.000	0.065	3.600	----	---	32.40	85.66*	---	---	1966	86734					
T81	S	0.06	R. T.	T-L	66.7	2.000	0.061	0.617	0.985	---	33.30	34.81	48.93*	1973	86213						
										66.7	2.000	0.061	0.625	0.980	---	35.20	37.10	51.54*	1973	86213	
										66.7	2.000	0.061	0.613	0.960	---	33.70	35.09	48.47*	1973	86213	
										66.7	2.000	0.061	0.625	1.065	---	35.40	37.31	55.88*	1973	86213	
										66.7	2.000	0.061	0.625	0.940	---	33.00	34.78	46.63*	1973	86213	
										66.7	2.000	0.061	0.617	0.985	---	33.60	35.13	49.37*	1973	86213	
T81	S	0.06	R. T.	T-L	67.2	2.000	0.062	0.622	0.840	---	32.30	33.98	41.74*	1973	86213						
										67.2	2.000	0.062	0.623	0.860	---	34.40	36.18	45.26*	1973	86213	
										67.2	2.000	0.062	0.622	0.950	---	33.60	35.34	47.90*	---	---	
										62.0	6.000	0.060	2.000	2.420	---	25.60	48.76	55.60	1966	86734	
										62.0	6.000	0.060	2.000	2.360	---	28.20	53.71	60.14	57.9/ 3.2	1966	86734
										62.0	9.000	0.060	3.000	3.700	---	24.80	57.85	66.90	1966	86734	
T81	S	0.06	R. T.	T-L	62.0	9.000	0.060	3.000	3.260	---	23.20	54.12	57.20	1966	86734						
										62.0	9.000	0.060	3.000	3.500	---	23.00	53.65	59.59	61.2/ 5.1	1966	86734
										62.0	15.000	0.060	5.000	5.600	---	16.80	50.59	54.60	34.6/ 0.0	1966	86734
										62.0	15.000	0.060	5.000	5.600	---	16.80	50.59	54.60	34.6/ 0.0	1966	86734
										62.0	18.000	0.060	6.000	6.640	---	15.60	51.46	55.08	34.6/ 0.7	1966	86734
										62.0	18.000	0.060	6.000	6.600	---	15.40	50.80	54.14	34.6/ 0.7	1966	86734
T81	S	0.06	R. T.	T-L	62.0	21.000	0.060	7.000	8.200	---	14.60	52.02	57.95	1966	86734						
										62.0	21.000	0.060	7.000	8.000	---	13.80	49.17	50.6/ 2.0	55.9/ 2.9	1966	86734
										62.0	21.000	0.060	7.000	8.000	---	13.80	49.17	50.6/ 2.0	55.9/ 2.9	1966	86734
										62.0	21.000	0.060	7.000	8.000	---	13.80	49.17	50.6/ 2.0	55.9/ 2.9	1966	86734
										62.0	21.000	0.060	7.000	8.000	---	13.80	49.17	50.6/ 2.0	55.9/ 2.9	1966	86734
										62.0	21.000	0.060	7.000	8.000	---	13.80	49.17	50.6/ 2.0	55.9/ 2.9	1966	86734

\*NOTE- NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STD. DEV.

TABLE 7.5.2.2 (Con't)

[illegible]

\*NOTE- NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STD. DEV.

TABLE 7.5.2.2 (Con't)

CONDITION		ALUMINUM		2024		K(C)						
		---SPECIMEN---		CRACK LENGTH		GROSS STRESS						
				W	B	2A(D)	2A(F)	S(D)	S(MAX)			
		FORM	THICK (IN)	TEST SPEC YIELD STR (KSI)	TEMP (F)	R. T.	L-T	P	S			
TBS1	1.00	65.8	20.000	1.000	7.000	9.170	---	10.70	38.42	46.84	1973	86213
	1.00	65.8	20.000	1.000	7.000	9.920	---	11.20	40.22	52.41	1973	86213
	1.00	65.8	20.000	1.000	7.000	9.970	---	11.00	39.50	49.90	1973	86213
	1.00	65.8	20.000	1.000	7.000	9.940	---	10.70	38.42	48.41	1973	86213
	1.00	65.8	20.000	1.000	7.000	9.680	---	11.40	40.94	52.22	1973	86213
	1.00	65.8	20.000	1.000	7.000	9.300	---	10.90	39.14	48.27	1973	86213
	1.00	65.8	20.000	1.000	7.000	9.300	---	11.50	41.30	50.93	1973	86213
	1.00	65.8	20.000	1.000	7.000	10.050	---	11.50	41.30	54.44	1973	86213
	1.00	66.1	20.000	1.000	7.000	9.250	---	10.00	35.91	44.09	1973	86213
	1.00	66.1	20.000	1.000	7.000	9.170	---	10.70	38.42	46.84	1973	86213
TBS1	1.00	66.1	20.000	1.000	7.000	9.710	---	9.80	35.19	43.01	1973	86213
	1.00	66.1	20.000	1.000	7.000	8.900	---	9.70	34.83	41.45	1973	86213
	0.12	64.4	3.000	0.125	1.000	1.300	14.90	28.10	37.84	43.55	1973	86213
	0.12	64.4	3.000	0.125	1.100	1.490	12.90	26.00	37.32	47.18*	1973	86213
	0.12	64.4	3.000	0.120	1.130	1.450	13.80	25.00	36.56	44.30	1973	86213
	0.12	64.4	3.000	0.124	1.000	1.420	19.40	25.90	34.88	43.09	1973	86213
	0.12	65.4	3.000	0.125	1.000	1.320	19.40	29.10	39.19	47.74	1973	86213
	0.12	65.4	3.000	0.125	1.100	1.560	13.90	25.40	36.46	48.06*	1973	86213
	0.12	65.4	3.000	0.125	1.000	1.410	17.20	28.20	37.98	48.80*	1973	86213
	0.12	65.4	3.000	0.125	1.070	1.380	14.80	26.90	37.89	45.73	1973	86213
TBS1	0.12	65.4	3.000	0.125	1.120	1.490	19.00	24.30	35.32	44.09	1973	86213
	0.12	65.4	3.000	0.125	1.090	1.300	15.80	26.90	37.41	43.60	1973	86213
	0.12	65.4	3.000	0.125	1.000	1.300	18.00	28.20	37.98	45.71	1973	86213
	0.12	65.4	3.000	0.125	1.000	1.250	16.70	26.40	35.95	41.93	1973	86213
	0.12	64.1	3.000	0.132	1.060	1.600	---	29.70	41.97	57.56*	1973	86213
	0.12	64.1	3.000	0.132	1.000	1.540	---	32.10	43.23	60.01*	1973	86213
	0.12	64.1	3.000	0.132	1.060	1.580	---	30.00	41.99	57.44*	1973	86213
	0.25	56.6	3.000	0.245	1.120	1.320	---	17.00	24.71	27.89	1973	86213
	0.25	59.2	3.000	0.249	1.180	1.560	---	17.30	26.09	32.73	1973	86213
	0.25	56.6	3.000	0.250	1.170	1.420	---	17.30	25.93	30.11	1973	86213
TBS1	0.25	56.6	3.000	0.251	1.160	1.500	---	18.60	27.71	33.95	1973	86213
	0.25	59.2	3.000	0.252	1.220	1.260	---	18.50	28.58	29.28	1973	86213
	0.25	59.2	3.000	0.252	1.180	1.540	---	18.00	27.14	33.66	1973	86213
	0.25	59.2	3.000	0.252	1.180	1.540	---	18.50	27.14	33.66	1973	86213



TABLE 7.5.2.2 (Con't)

		ALUMINUM		2024		K(C)										
CONDITION	--PRODUCT-- FORM	THICK (IN)	TEST SPEC TEMP OR (F)	YIELD STR (KSI)	CRACK LENGTH CROSS STRESS				K(C) STAN MEAN DEV (KSI*SQRT IN)	K(C) STAN MEAN DEV (KSI*SQRT IN)	DATE	REFER				
					---SPECIMEN---		CRACK LENGTH CROSS STRESS									
					WIDTH (IN)	THICK (IN)	INIT (IN)	FINAL (IN)					ONSET (KSI)	MAX (KSI)		
					W	B	2A(D)	2A(F)	S(O)	S(MAX)						
BUCKLING OF CRACK EDGES NOT RESTRAINED																
T851	P	0.25	R. T.	T-L	66.2	4.000	0.243	1.330	1.900	---	25.00	38.81	50.40	1973	86213	
		0.25			66.2	4.000	0.243	1.440	1.940	---	23.30	38.14	47.82	1973	86213	
		0.25			66.2	4.000	0.243	1.330	1.800	---	25.10	38.97	48.40	1973	86213	
		0.25			65.8	4.000	0.256	1.330	1.860	---	28.00	43.47	55.45	1973	86213	
		0.25			65.8	4.000	0.256	1.400	1.940	---	27.00	43.98	55.41	1973	86213	
		0.25			68.0	4.000	0.256	1.400	1.670	---	19.30	31.00	35.11	1973	86213	
		0.25			68.0	4.000	0.255	1.390	1.740	---	19.90	31.81	37.36	47.1/ 8.1	1973	86213
BUCKLING OF CRACK EDGES NOT RESTRAINED																
T851	P	1.00	R. T.	T-L	64.4	20.000	1.000	7.000	9.200	---	7.10	25.90	31.16	1973	86213	
		1.00			64.4	20.000	1.000	7.000	9.230	---	7.40	26.37	32.57	1973	86213	
		1.00			64.4	20.000	1.000	7.000	9.100	---	7.20	25.86	31.32	1973	86213	
		1.00			64.4	20.000	1.000	7.000	9.000	---	7.50	26.93	32.34	1973	86213	
		1.00			63.4	20.000	1.000	7.000	8.980	---	7.90	28.37	34.00	1973	86213	
		1.00			65.4	20.000	1.000	7.000	8.840	---	8.00	28.73	34.01	1973	86213	
		1.00			63.4	20.000	1.000	7.000	8.880	---	7.80	28.01	33.27	1973	86213	
		1.00			65.4	20.000	1.000	7.000	8.890	---	7.90	28.37	33.73	1973	86213	
		1.00			65.4	20.000	1.000	7.000	9.320	---	8.00	28.73	35.49	1973	86213	
		1.00			63.4	20.000	1.000	7.000	9.350	---	8.40	30.17	37.27	1973	86213	
		1.00			65.4	20.000	1.000	7.000	8.770	---	7.70	27.65	32.53	1973	86213	
		1.00			65.4	20.000	1.000	7.000	9.700	---	7.90	28.37	36.25	33.7/ 1.9	1973	86213
BUCKLING OF CRACK EDGES NOT RESTRAINED																
T86	S	0.06	R. T.	L-T	72.4	2.000	0.064	0.619	0.920	---	35.90	37.61	45.56*	1973	86213	
		0.06			72.4	2.000	0.064	0.622	0.900	---	35.00	36.82	47.72*	1973	86213	
		0.06			72.4	2.000	0.064	0.623	0.890	---	34.60	36.40	45.11*	1973	86213	
		0.06			72.5	2.000	0.062	0.614	0.970	---	38.70	40.38	56.16*	1973	86213	
		0.06			72.5	2.000	0.062	0.616	0.960	---	35.90	37.53	51.63*	1973	86213	
		0.06			72.5	2.000	0.062	0.619	0.860	---	37.30	39.08	49.07*	1973	86213	
		0.06			72.5	2.000	0.062	0.617	0.900	---	36.40	38.06	49.63*	1973	86213	
		0.06			73.4	2.000	0.062	0.623	0.720	---	38.40	40.39	44.44*	1973	86213	
		0.06			73.4	2.000	0.062	0.622	0.900	---	36.90	38.81	50.31*	1973	86213	
		0.06			73.4	2.000	0.062	0.624	0.910	---	36.90	38.89	50.76*	1973	86213	

\*NOTE- NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STD. DEV.

TABLE 7.5.2.2 (Con't)

CONDITION	--PRODUCT-- FORM THICK TEMP OR (IN) (F)	YIELD STR (KSI)	ALUMINUM		2024				K(C)				K(C) STAN K(C) MEAN DEV (KSI*SQRT IN)	DATE REFER	
			---SPECIMEN---		CRACK LENGTH		GROSS STRESS		K(APP) STAN						
			WIDTH (IN)	THICK (IN)	INIT (IN)	FINAL (IN)	ONSET (KSI)	MAX (KSI)	K(APP) (KSI*SQRT IN)	MEAN DEV (KSI*SQRT IN)					
			W	B	2A(D)	2A(F)	S(D)	S(MAX)							
T86	S	0.06	R. T.	L-T	72.9	15.800	0.064	3.000	3.400	---	22.20	49.29	52.82	1973 86213	
		0.06			72.9	15.810	0.063	6.010	6.930	---	16.10	54.40	60.45	1973 86213	
		0.06			72.9	15.810	0.064	3.990	4.660	---	18.20	47.44	52.06	1973 86213	
		0.06			72.9	15.820	0.064	5.990	6.800	---	12.80	43.14	47.35	1973 86213	
	0.06			72.9	15.820	0.064	1.010	1.420	---	34.70	43.82	47.6/ 4.6	53.0/ 4.7	1973 86213	
T86	S	0.06	R. T.	T-L	70.8	2.000	0.064	0.624	0.870	---	32.20	33.94	42.75*	1973 86213	
		0.06			70.8	2.000	0.064	0.622	0.880	---	31.60	33.24	42.33	1973 86213	
		0.06			70.8	2.000	0.064	0.623	0.890	---	31.70	33.34	42.84*	1973 86213	
		0.06			71.6	2.000	0.062	0.615	0.915	---	32.40	33.80	44.73*	1973 86213	
	0.06			71.6	2.000	0.062	0.616	0.800	---	34.70	36.28	43.25*	1973 86213		
	0.06			71.6	2.000	0.062	0.618	0.875	---	33.20	34.78	44.23*	1973 86213		
	0.06			71.6	2.000	0.062	0.617	0.815	---	33.90	35.44	42.79	1973 86213		
	0.06			72.6	2.000	0.063	0.620	0.860	---	32.70	34.33	43.02	1973 86213		
	0.06			72.6	2.000	0.063	0.620	0.910	---	32.60	34.22	44.85*	1973 86213		
	0.06			72.6	2.000	0.063	0.623	0.820	---	32.90	34.61	41.75	42.5/ 0.6	1973 86213	
T86	S	0.06	R. T.	T-L	71.2	15.810	0.063	3.010	3.430	---	19.70	43.82	47.10	1973 86213	
		0.06			71.2	15.810	0.064	6.020	6.630	---	11.80	39.92	42.82	1973 86213	
		0.06			71.2	15.820	0.063	3.020	3.360	---	21.90	47.91	50.81	1973 86213	
		0.06			71.2	15.820	0.064	4.000	4.620	---	15.70	40.98	44.67	1973 86213	
	0.06			71.2	15.820	0.064	1.000	1.200	---	31.90	40.08	42.5/ 3.4	43.95	45.9/ 3.2	1973 86213

\*NOTE- NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STD. DEV.

CONDITION/HT: T351  
 FORM: .19" TH SHEET  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T

SPECIMEN THK: .188"  
 SPECIMEN WIDTH: 4.000"  
 $K_C$  (KSI $\sqrt{\text{in}}$ ):  
 REFERENCE: DA001

ALUM.  
 ALLOY

2024

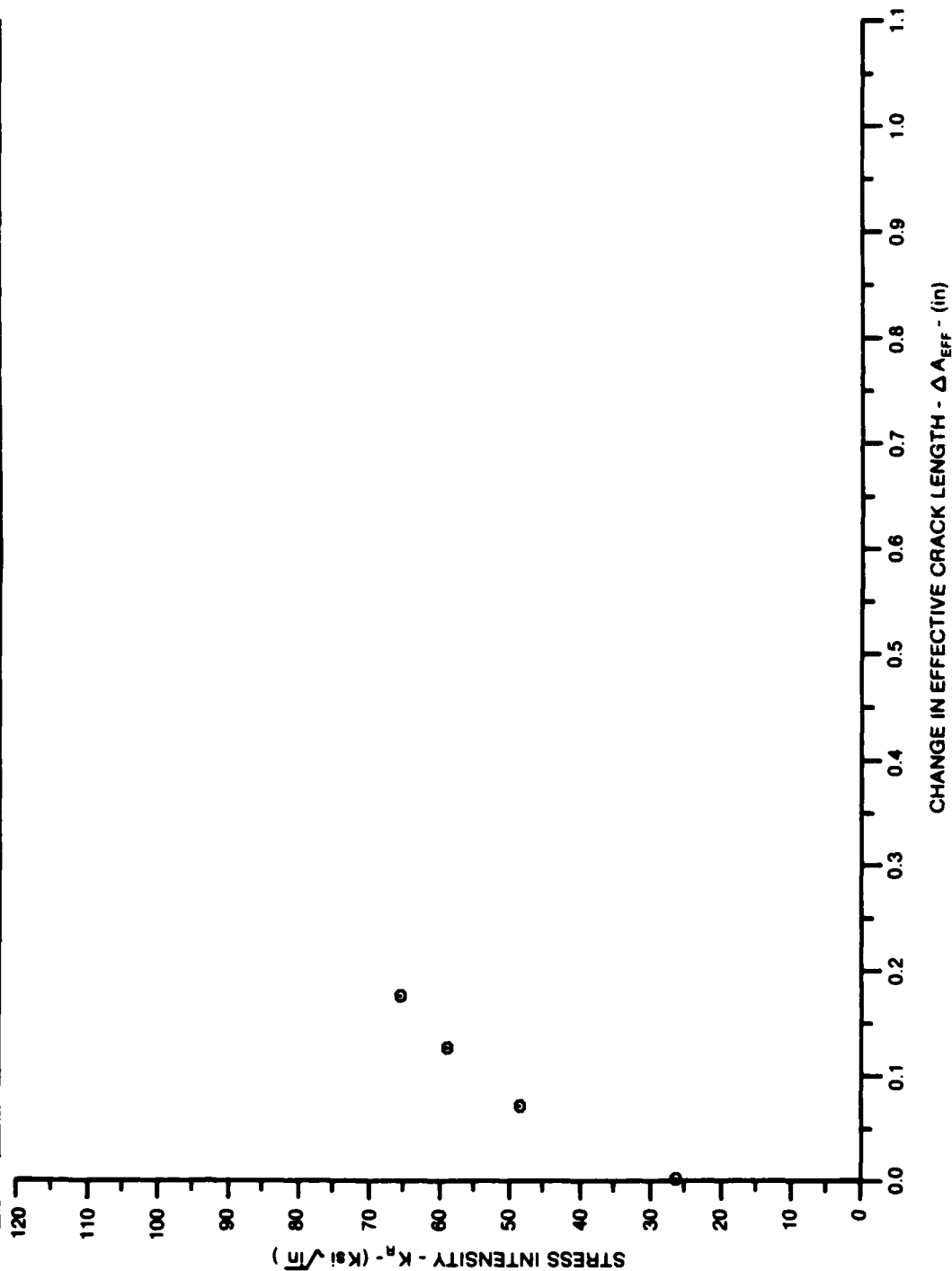


Figure 7.5.2.3

ALUM. ALLOY
2024

SPECIMEN THK: .191"  
 SPECIMEN WIDTH: 4.000"  
 $K_{IC}$  (Ksi $\sqrt{in}$ ):  
 REFERENCE: DA001

CONDITION/HT: T351  
 FORM: .19" TH SHEET  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T

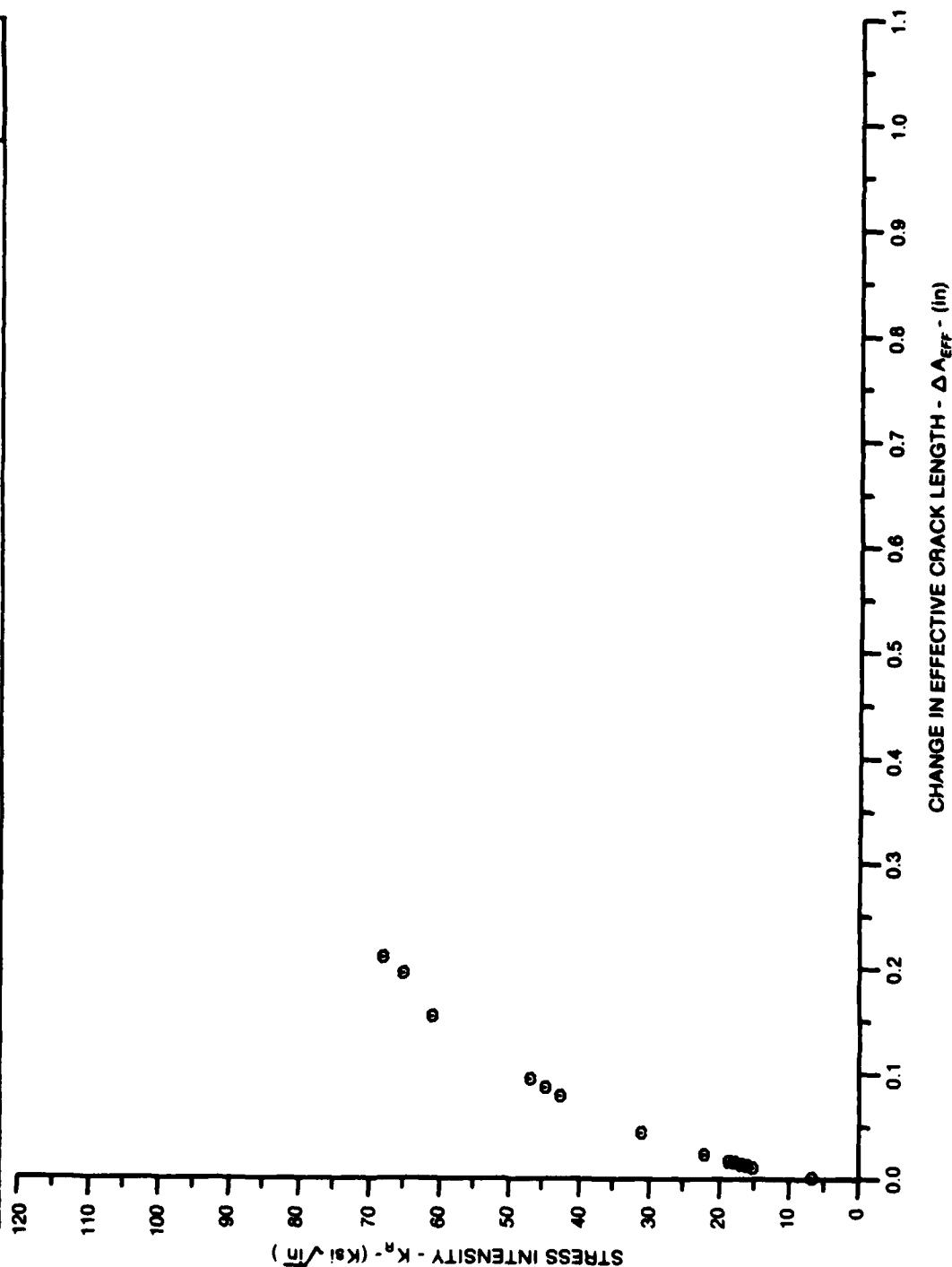


Figure 7.5.2.4

ALUM.  
ALLOY

2024

SPECIMEN THK: 302"  
SPECIMEN WIDTH: 4.000"  
 $K_{IC}$  (Ksi $\sqrt{in}$ ):  
REFERENCE: DA001

CONDITION/H: T351  
FORM: .19" TH SHEET  
SPECIMEN TYPE: CCP  
ORIENTATION: L-T

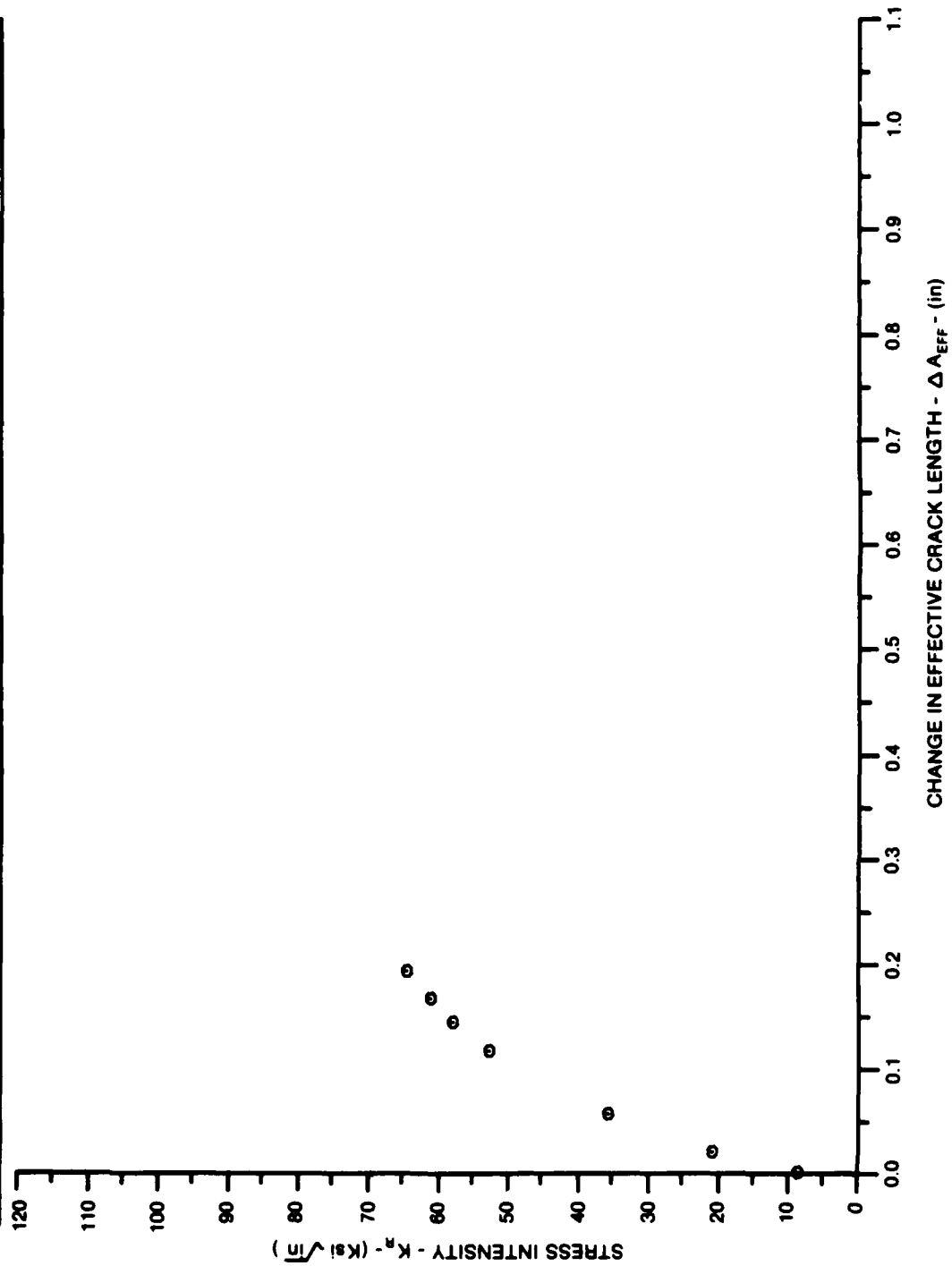


Figure 7.5.2.5

ALUM.  
ALLOY

2024

SPECIMEN THK: .181"  
SPECIMEN WIDTH: 11.888"  
 $K_{IC}$  (ksi $\sqrt{in}$ ):  
REFERENCE: DA001

CONDITION/HT: T351  
FORM: .19" TH SHEET  
SPECIMEN TYPE: CCP  
ORIENTATION: L-T

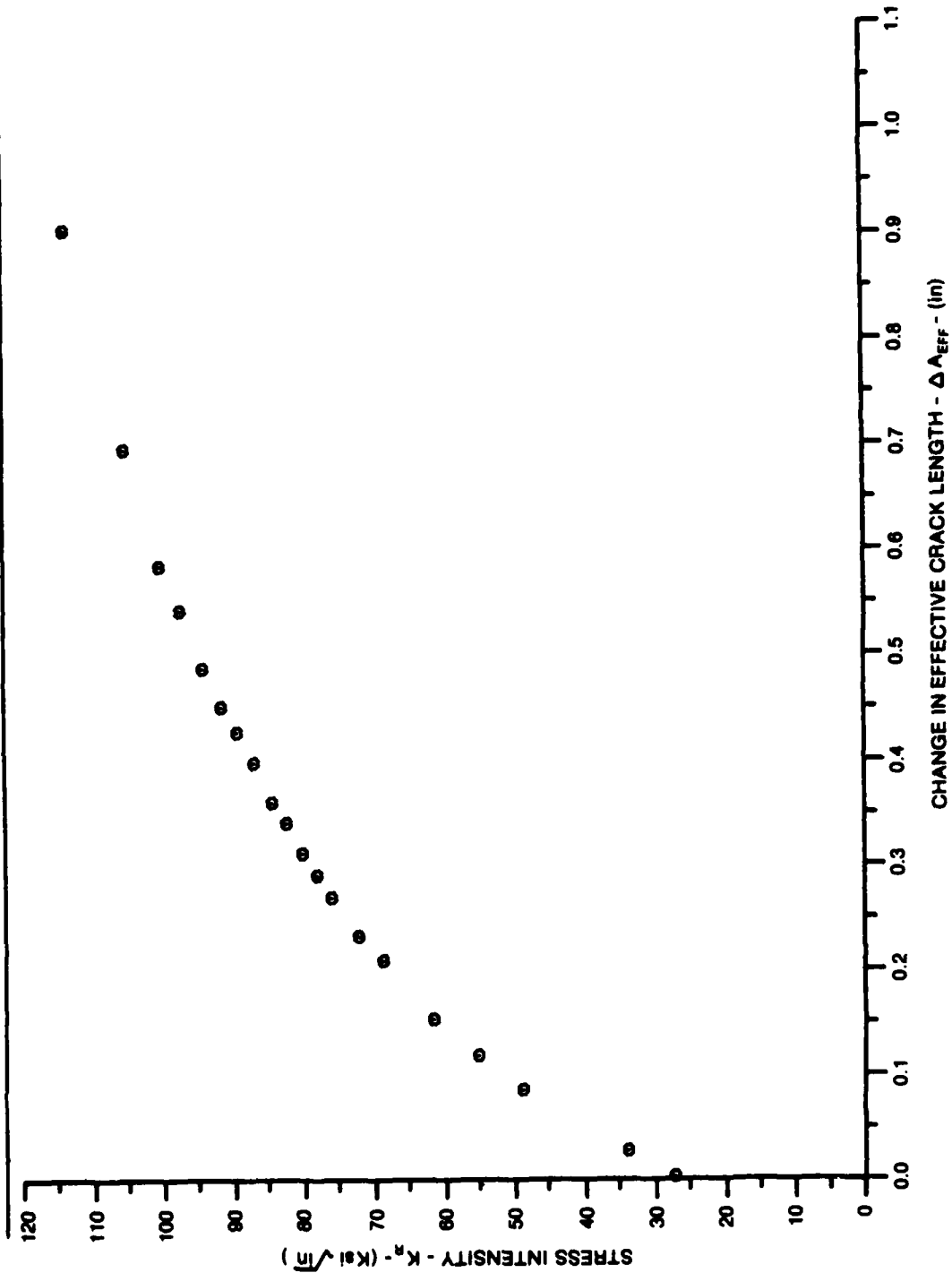


Figure 7.5.2.6

ALUM. ALLOY
2024

SPECIMEN THK: .104"  
 SPECIMEN WIDTH: 12.002"  
 $K_C (ksi\sqrt{in})$ :  
 REFERENCE: DAD01

CONDITION: T351  
 FORM: .10" TH SHEET  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T

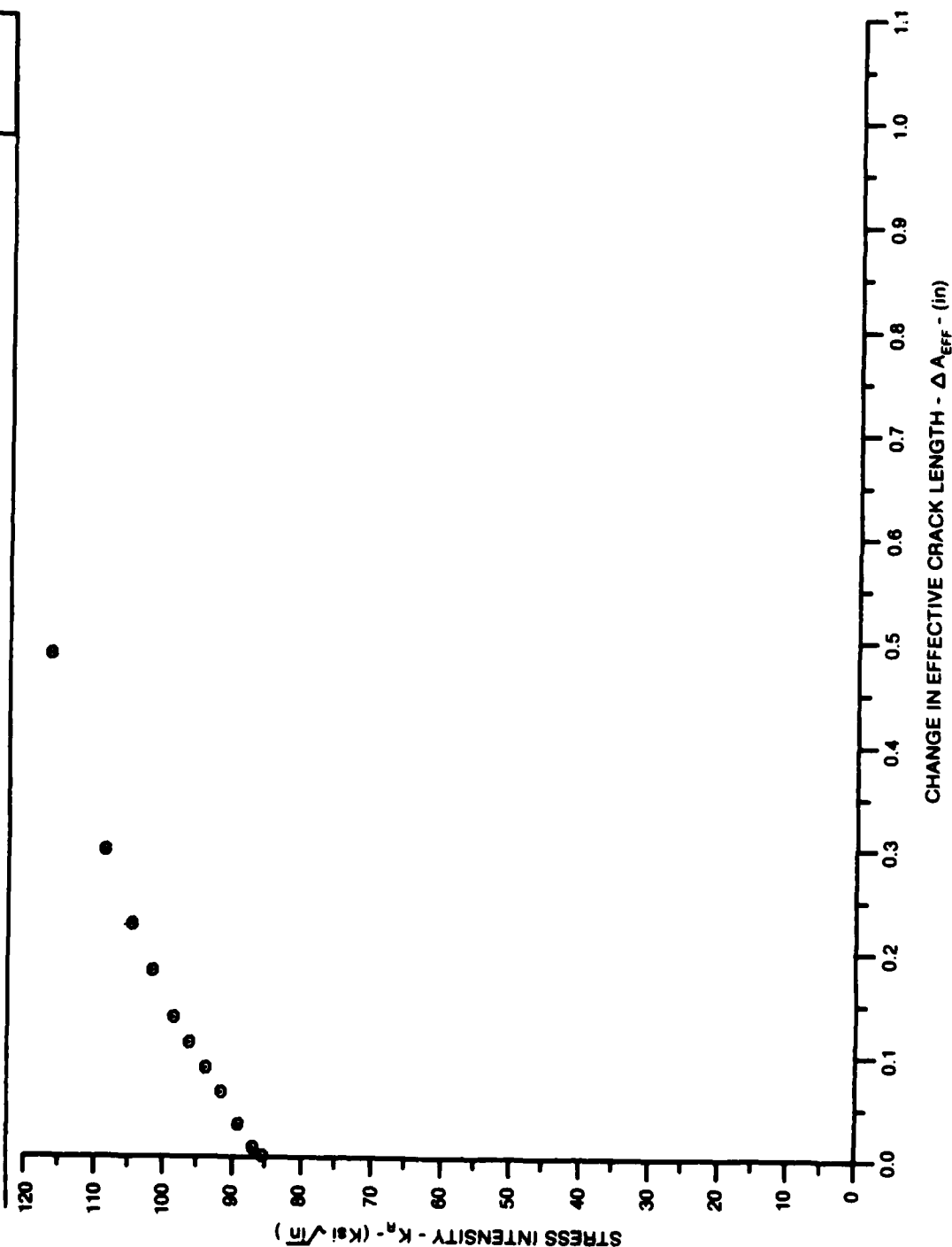


Figure 7.5.2.7

ALUM. ALLOY
2024

SPECIMEN THK: .189"  
 SPECIMEN WIDTH: 11.997"  
 $K_C$  (KSI $\sqrt{in}$ ):  
 REFERENCE: DA001

CONDITION/HT: T351  
 FORM: .19" TH SHEET  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T

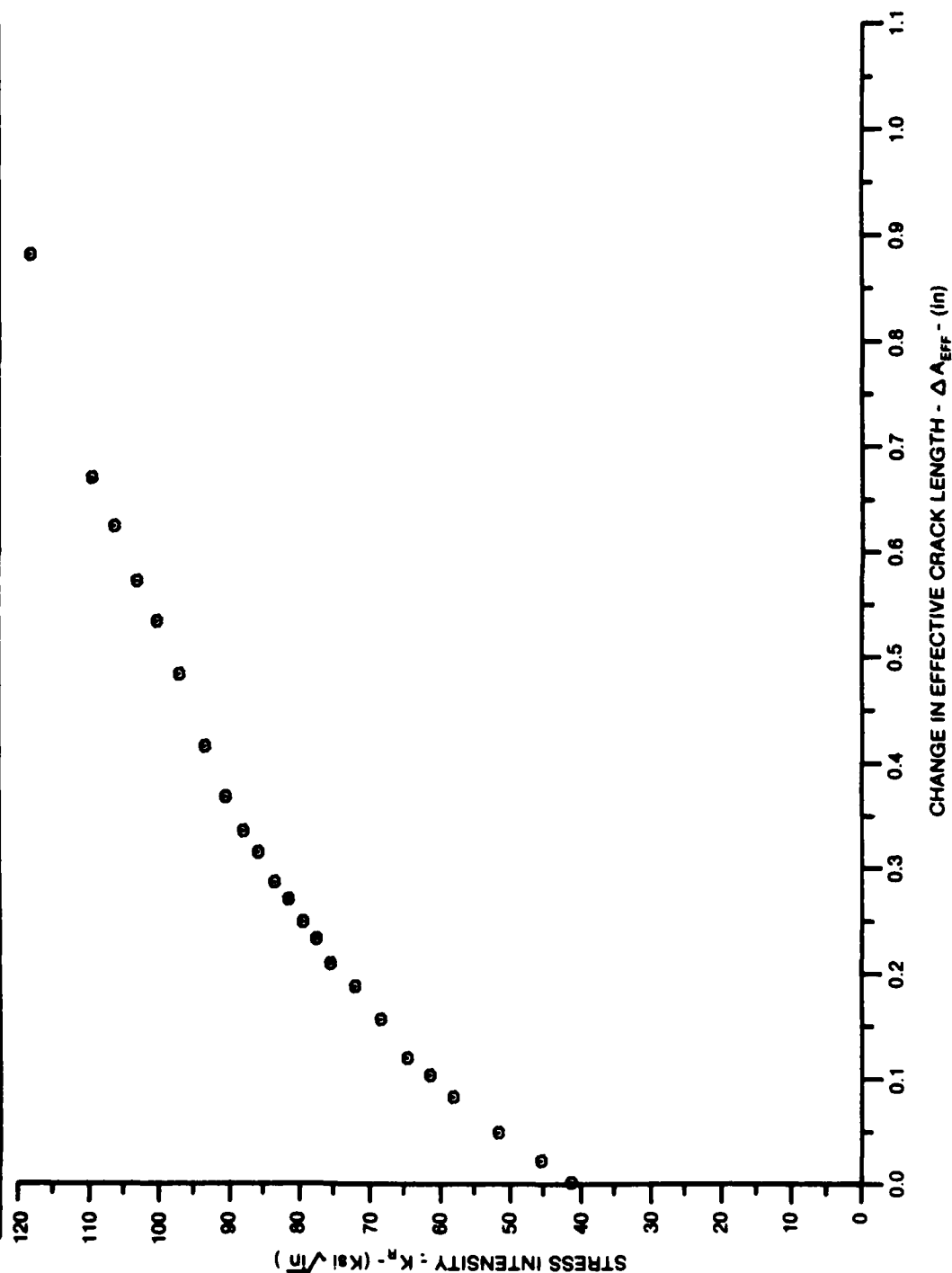


Figure 7.5.2.8



ALUM.  
ALLOY

2024

SPECIMEN THK: .250"  
SPECIMEN WIDTH: 4.000"  
 $K_{IC}$  (Ksi- $\sqrt{\text{in}}$ ):  
REFERENCE: DA001

CONDITION/HT: T351  
FORM: .25" TH PLATE  
SPECIMEN TYPE: CCP  
ORIENTATION: L-T

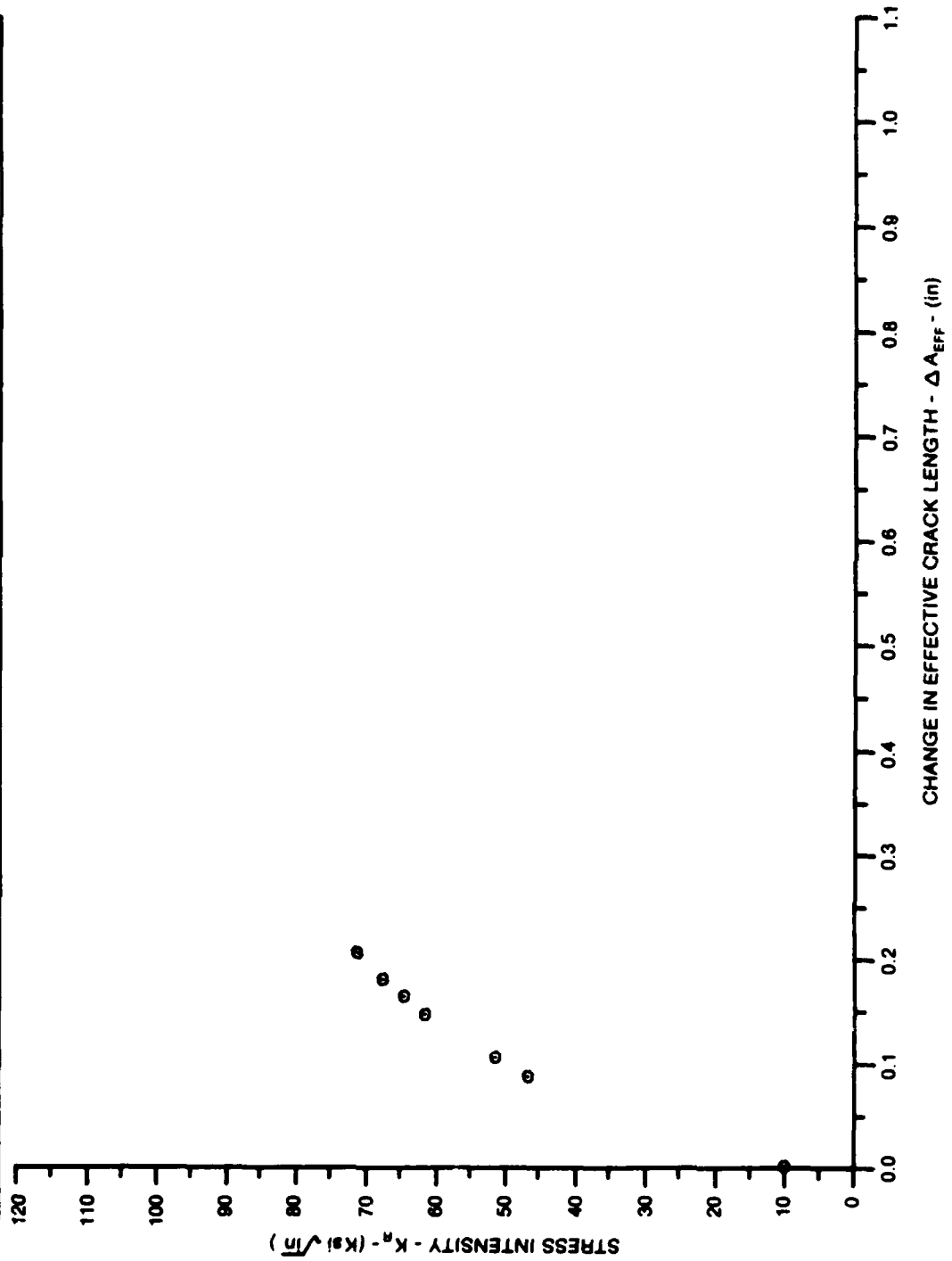


Figure 7.5.2.9

ALUM.  
ALLOY

2024

SPECIMEN THK: .250"  
SPECIMEN WIDTH: 4.002"  
 $K_{IC}$  (Ksi $\sqrt{in}$ ):  
REFERENCE: DAB01

CONDITION/HT: T351  
FORM: .25" TH PLATE  
SPECIMEN TYPE: CCP  
ORIENTATION: L-T

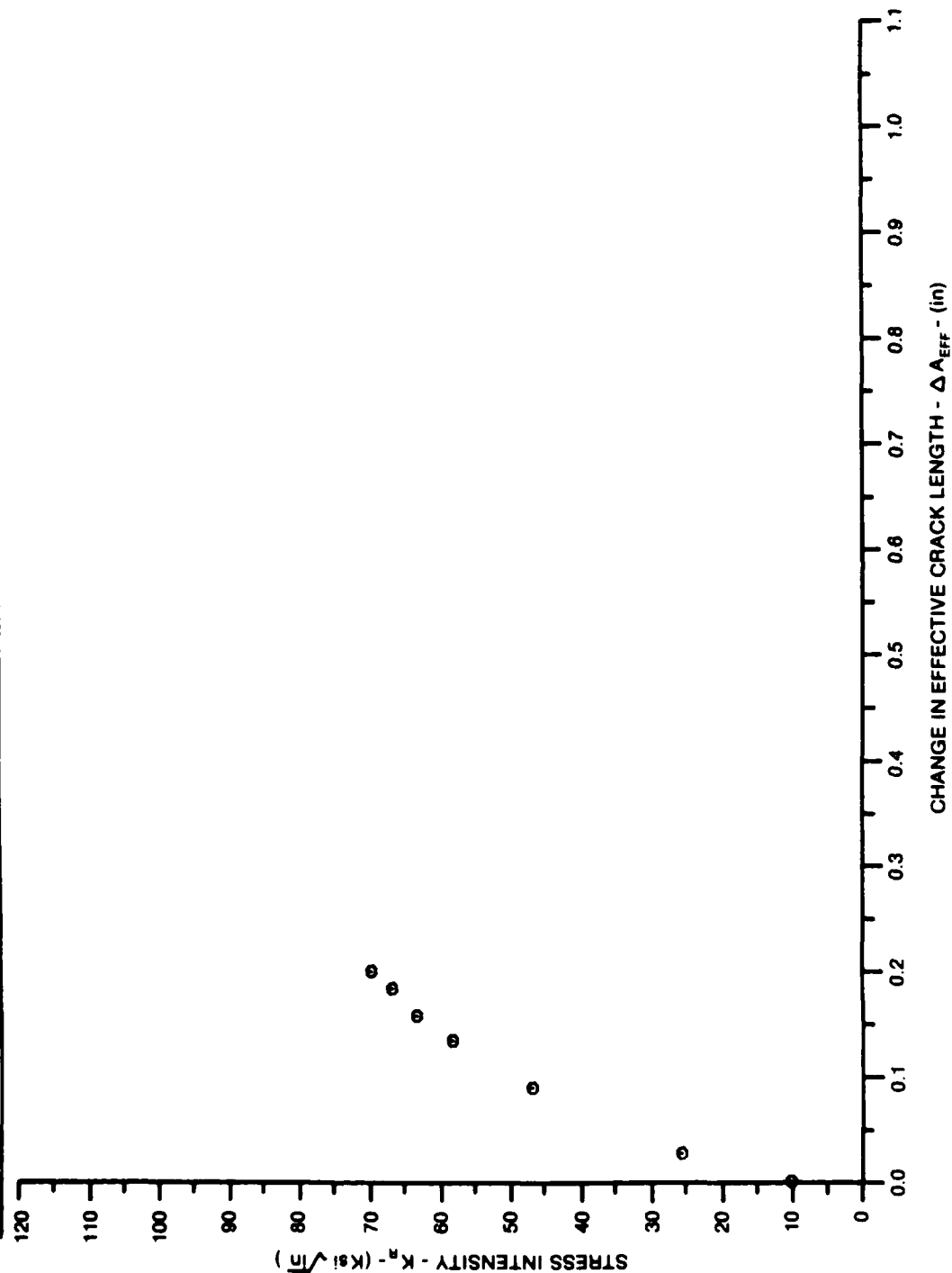


Figure 7.5.2.10

ALUM.  
ALLOY

2024

SPECIMEN THK: .260"  
SPECIMEN WIDTH: 4.000"  
 $K_{IC}$  (Ksi $\sqrt{in}$ ):  
REFERENCE: DA001

CONDITION/HT: T351  
FORM: .25" TH PLATE  
SPECIMEN TYPE: CCP  
ORIENTATION: L-T

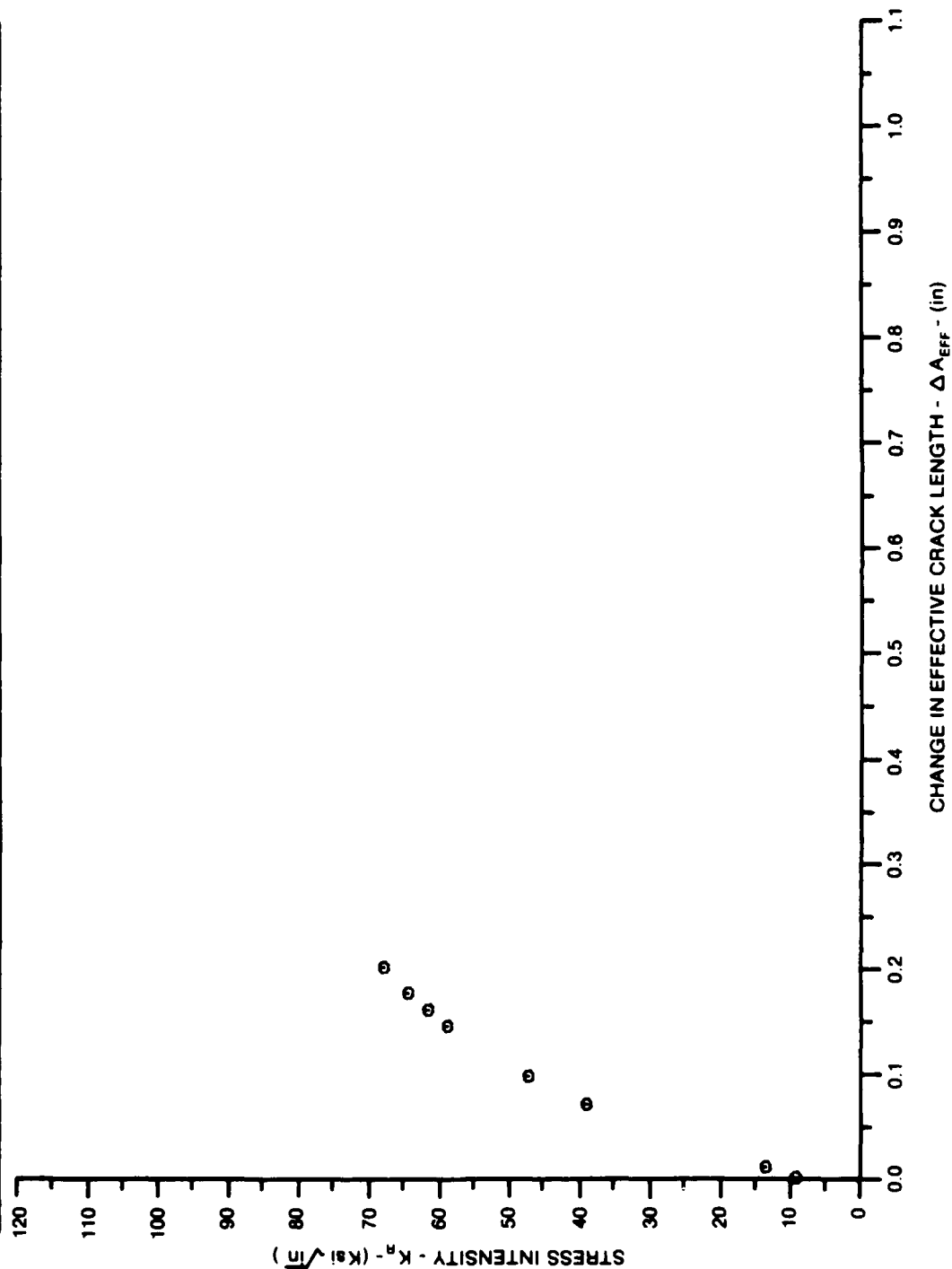


Figure 7.5.2.11

ALUM. ALLOY
2024

SPECIMEN THK: .241"  
 SPECIMEN WIDTH: 8.000"  
 $K_I (ksi\sqrt{in})$ :  
 REFERENCE: DA001

CONDITION/HT: T351  
 FORM: .25" TH PLATE  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T

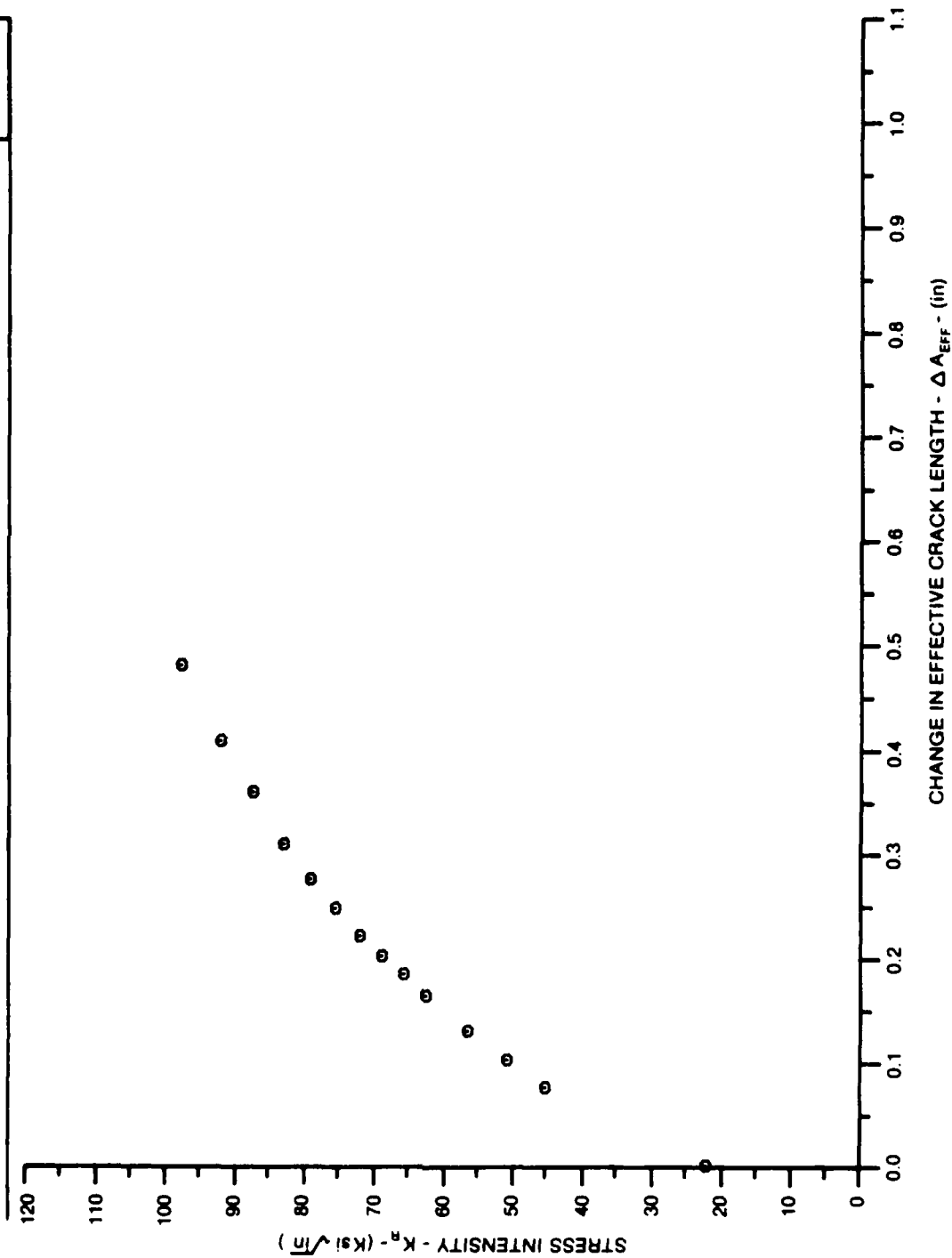


Figure 7.5.2.12

ALUM. ALLOY
2024

SPECIMEN THK: .241"  
 SPECIMEN WIDTH: 9.000"  
 $K_C$  (KSI $\sqrt{\text{in}}$ ):  
 REFERENCE: DA001

CONDITION/HT: T351  
 FORM: .25" TH PLATE  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T

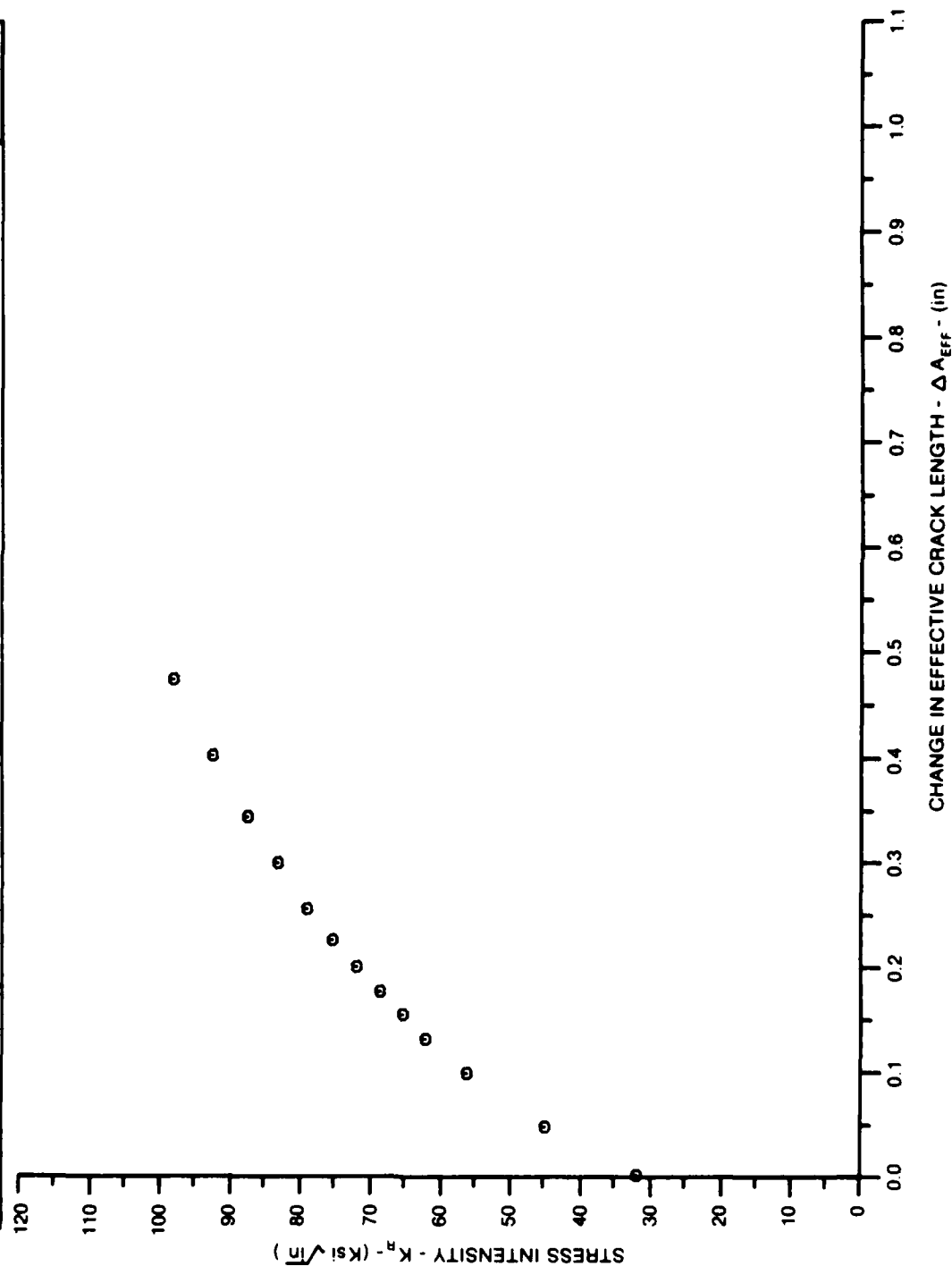


Figure 7.5.2.13

ALUM. ALLOY
2024

SPECIMEN THK: .241"  
 SPECIMEN WIDTH: 9.000"  
 $K_{IC}$  (Ksi $\sqrt{in}$ ):  
 REFERENCE: DA001

CONDITION/HT: T351  
 FORM: .25" TH PLATE  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T

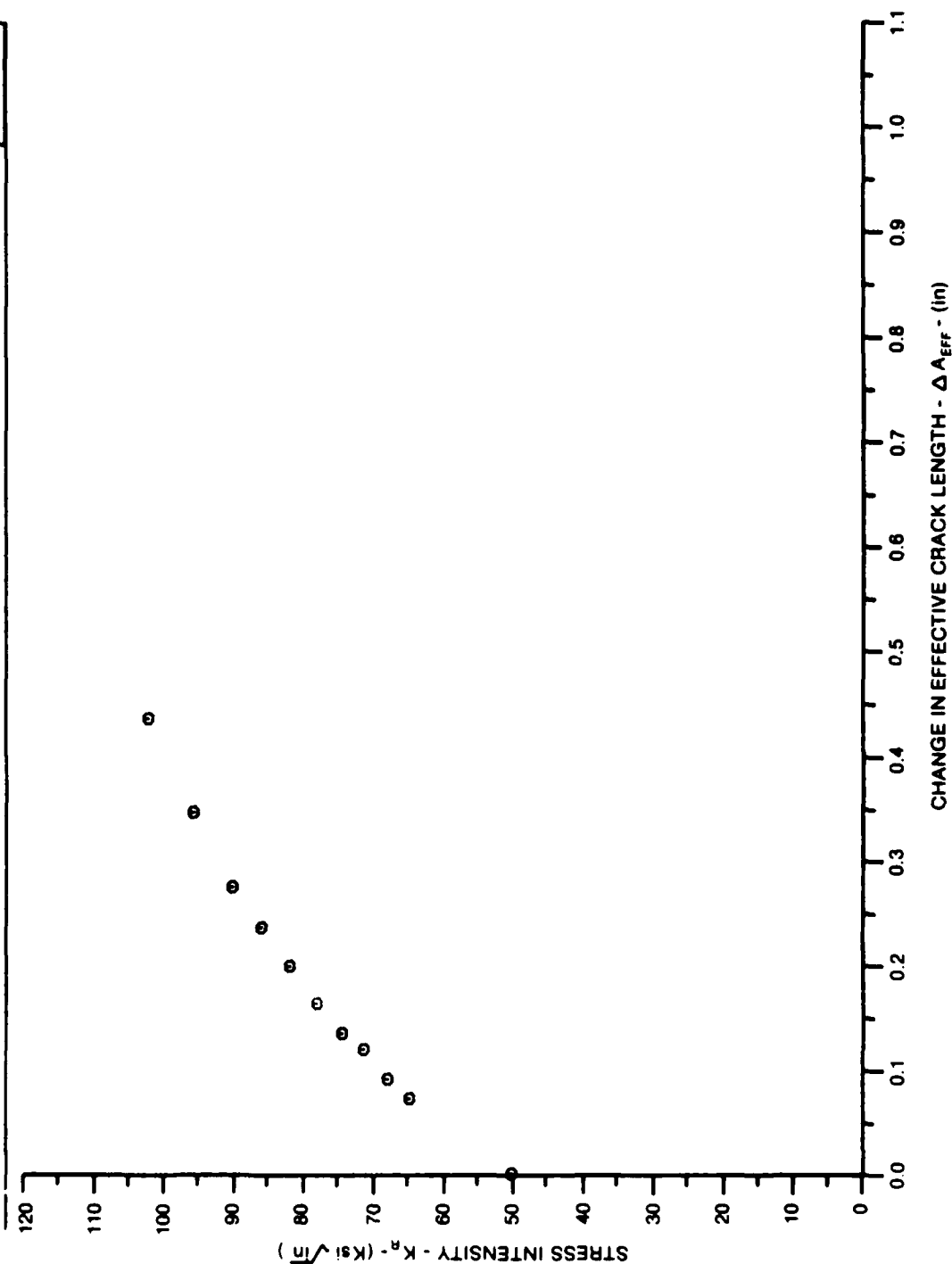


Figure 7.5.2.14

ALUM. ALLOY
2024

SPECIMEN THK: .242"  
 SPECIMEN WIDTH: 8.995"  
 $K_I$  (Ksi $\sqrt{in}$ ):  
 REFERENCE: DA0001

CONDITION/HT: T351  
 FORM: .25" TH PLATE  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T

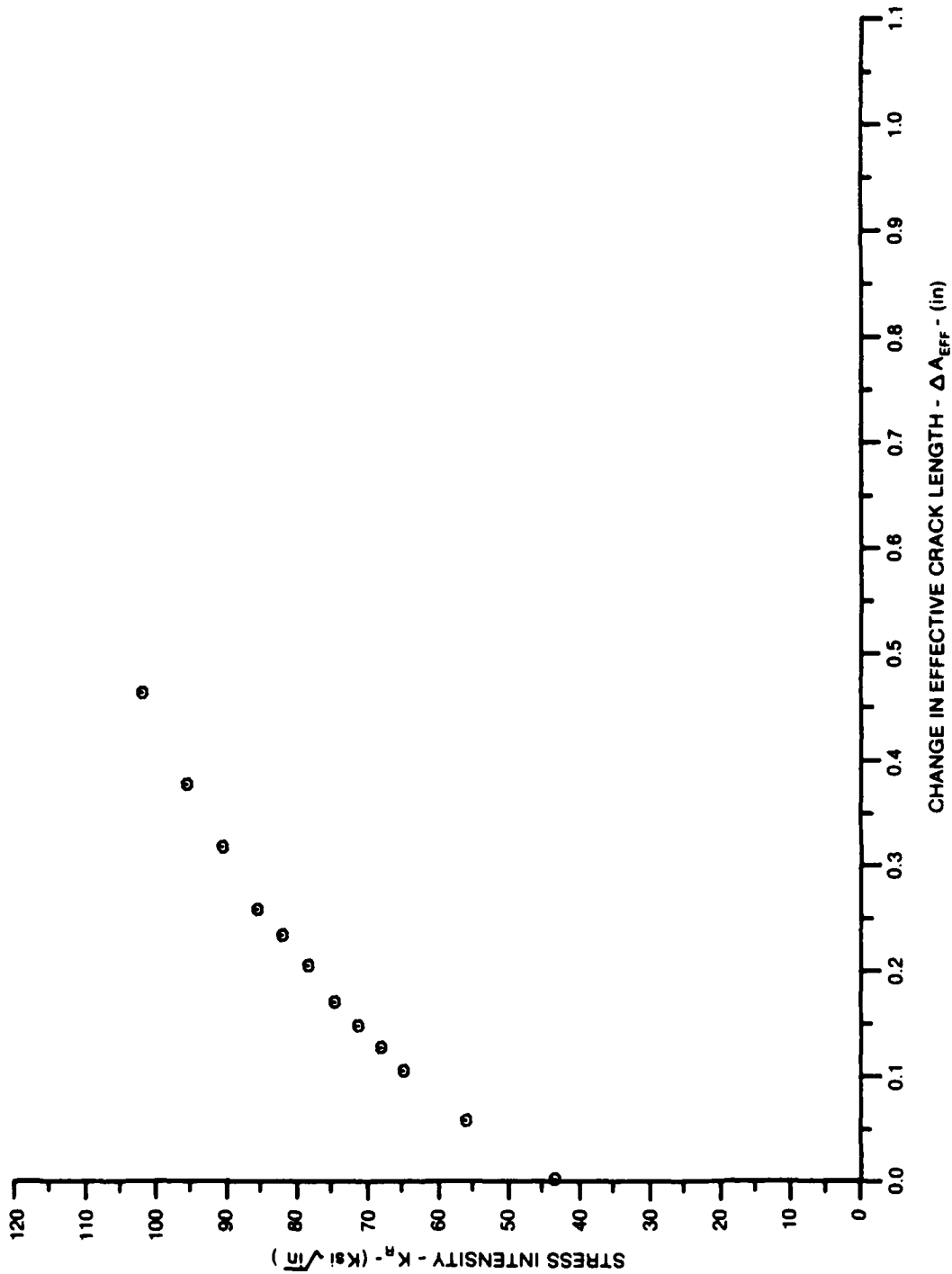


Figure 7.5.2.15

ALUM. ALLOY
2024

SPECIMEN THK: .242"  
 SPECIMEN WIDTH: 9.000"  
 $K_0$  (Ksi $\sqrt{\text{in}}$ ):  
 REFERENCE: DA001

CONDITION/HT: T351  
 FORM: .25" TH PLATE  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T

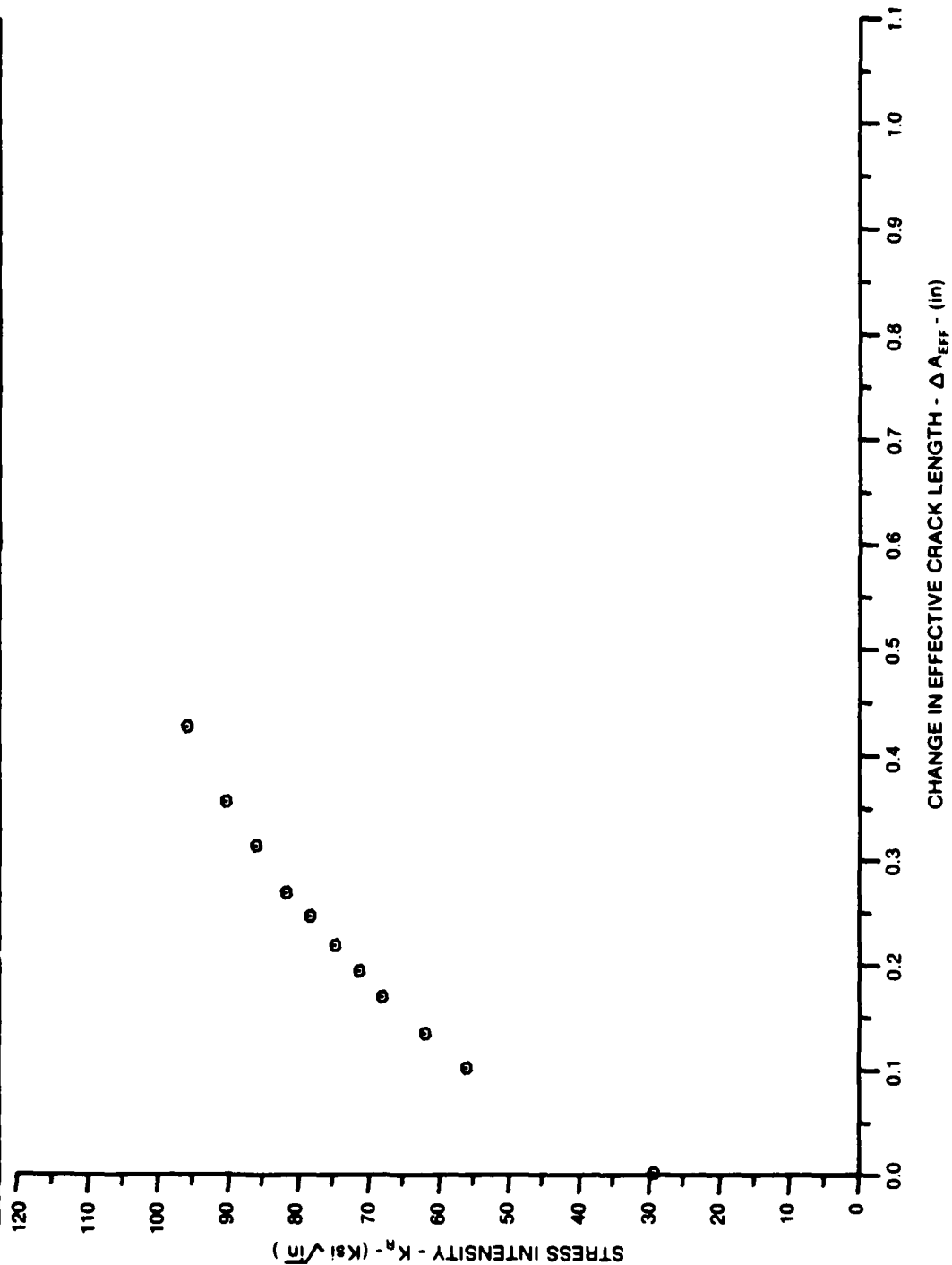


Figure 7.5.2.16



ALUM. ALLOY
2024

SPECIMEN THK: .250"  
 SPECIMEN WIDTH: 12.005"  
 $K_I$  (Ksi $\sqrt{in}$ ):  
 REFERENCE: DA001

CONDITION/HT: T351  
 FORM: .25" TH PLATE  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T

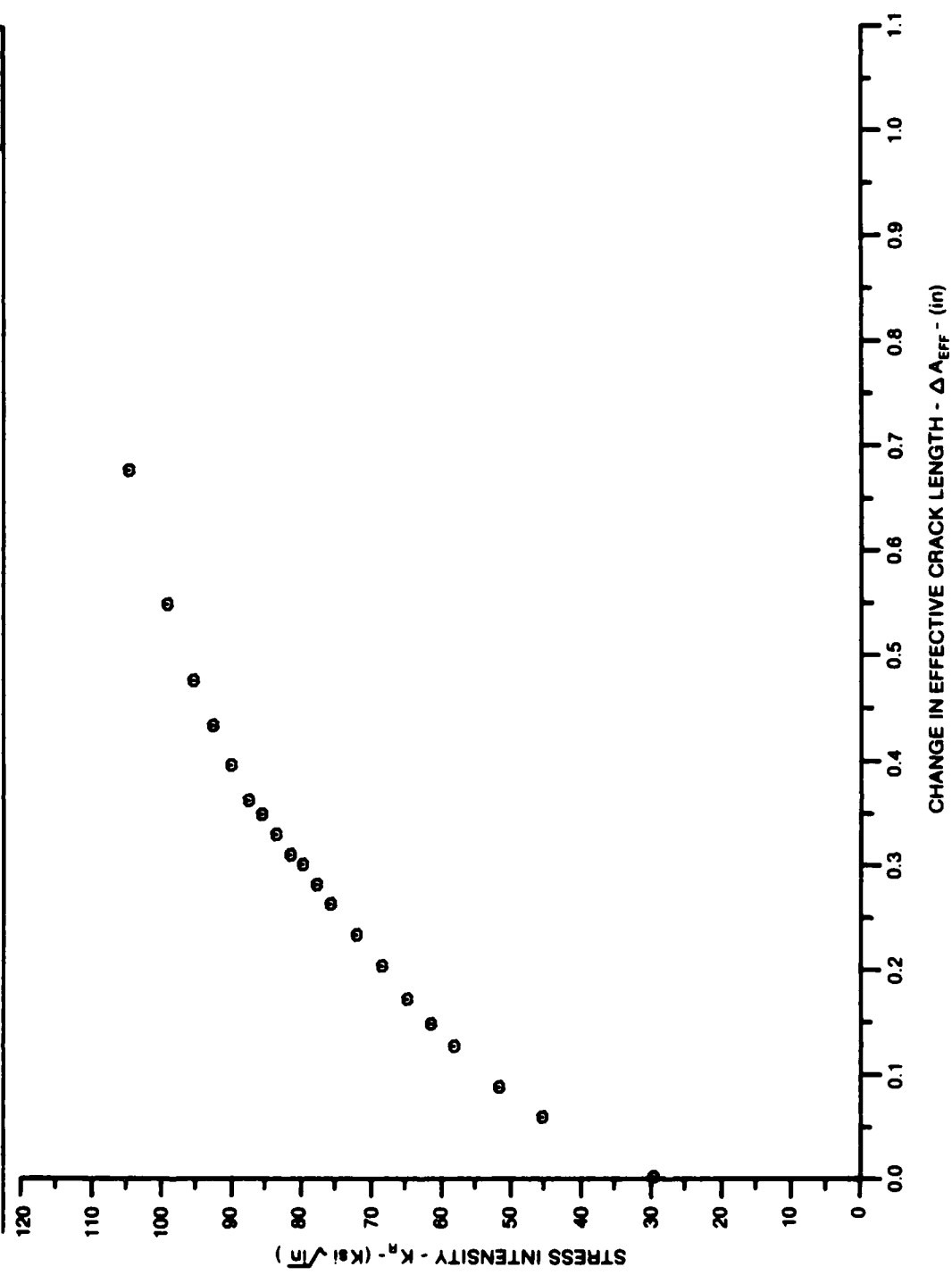


Figure 7.5.2.17

ALUM.  
ALLOY

2024

SPECIMEN THK: .250"  
SPECIMEN WIDTH: 12.007"  
 $K_{IC}$  (ksi $\sqrt{in}$ ):  
REFERENCE: DA001

CONDITION/HT: T351  
FORM: .25" TH PLATE  
SPECIMEN TYPE: CCP  
ORIENTATION: L-T

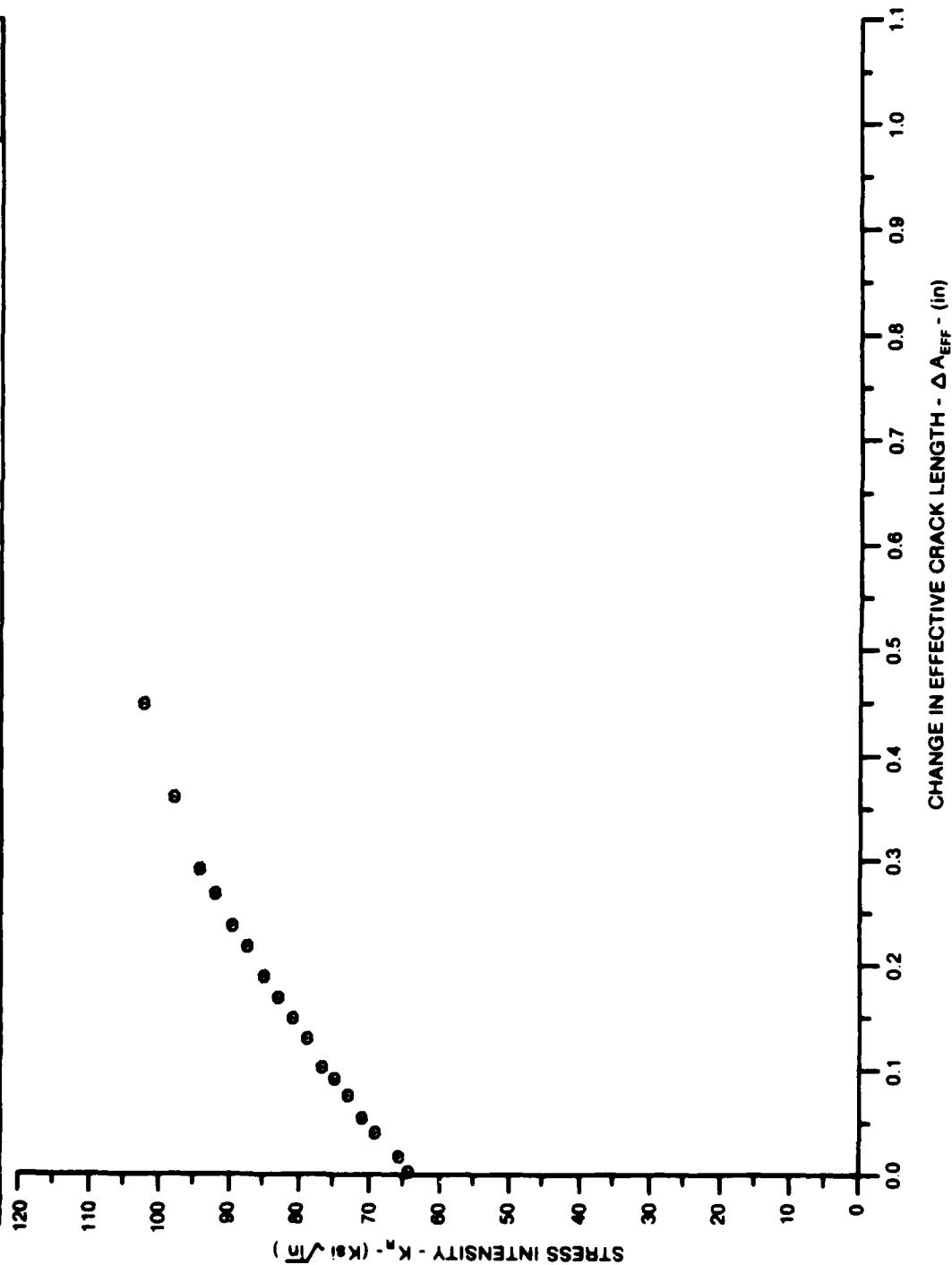


Figure 7.5.2.18

ALUM.  
ALLOY

2024

SPECIMEN THK: .260"  
SPECIMEN WIDTH: 12.007"  
 $K_I$  (Ksi $\sqrt{in}$ ):  
REFERENCE: DA001

CONDITION: T351  
FORM: .25" TH PLATE  
SPECIMEN TYPE: CCP  
ORIENTATION: L-T

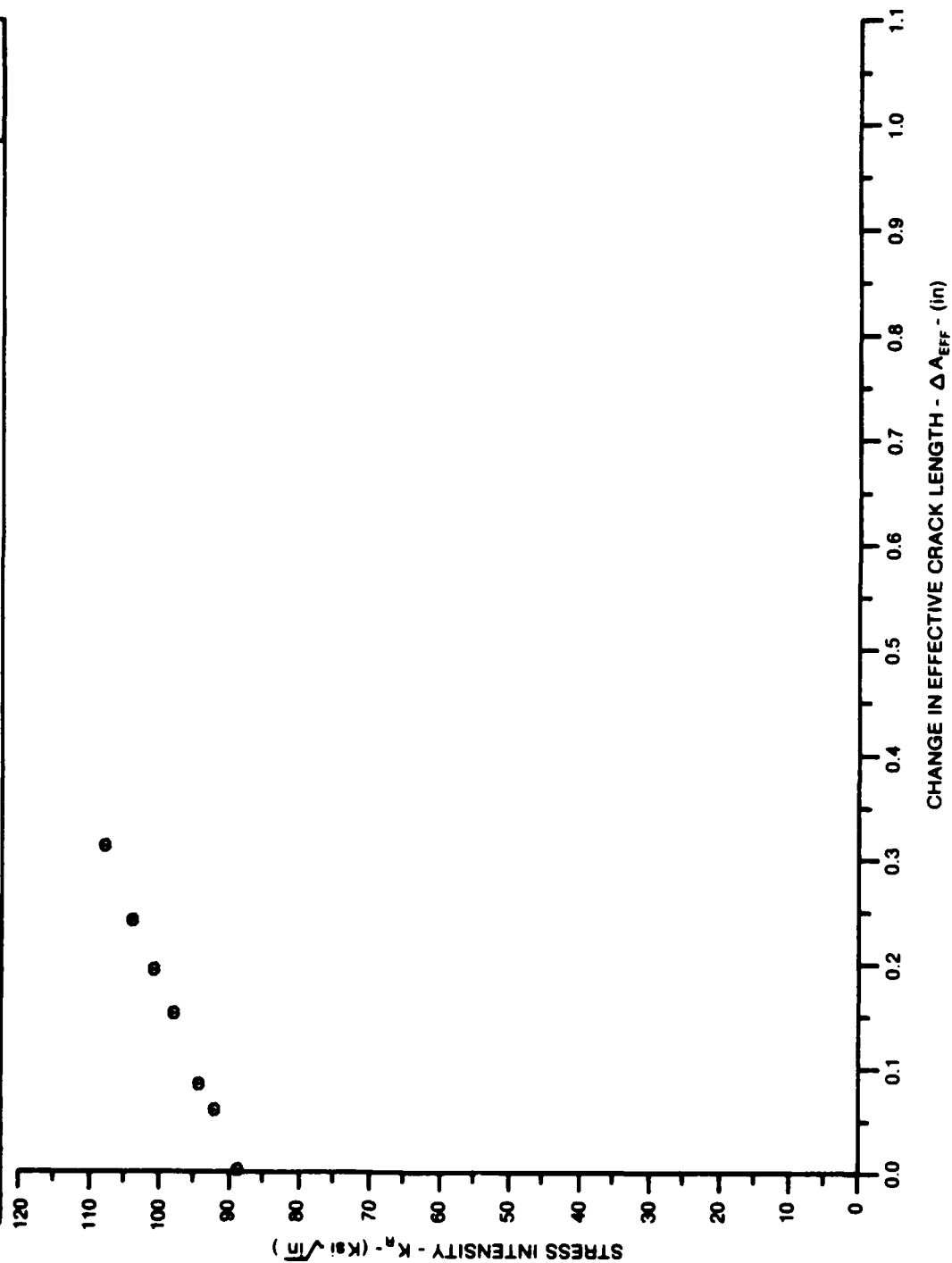


Figure 7.5.2.19

ALUM.  
ALLOY

2024

SPECIMEN THK: .201"  
SPECIMEN WIDTH: 12.007"  
 $K_{IC}$  (ksi $\sqrt{in}$ ):  
REFERENCE: DA001

CONDITION/HIT: T351  
FORM: .25" TH PLATE  
SPECIMEN TYPE: CCP  
ORIENTATION: L-T

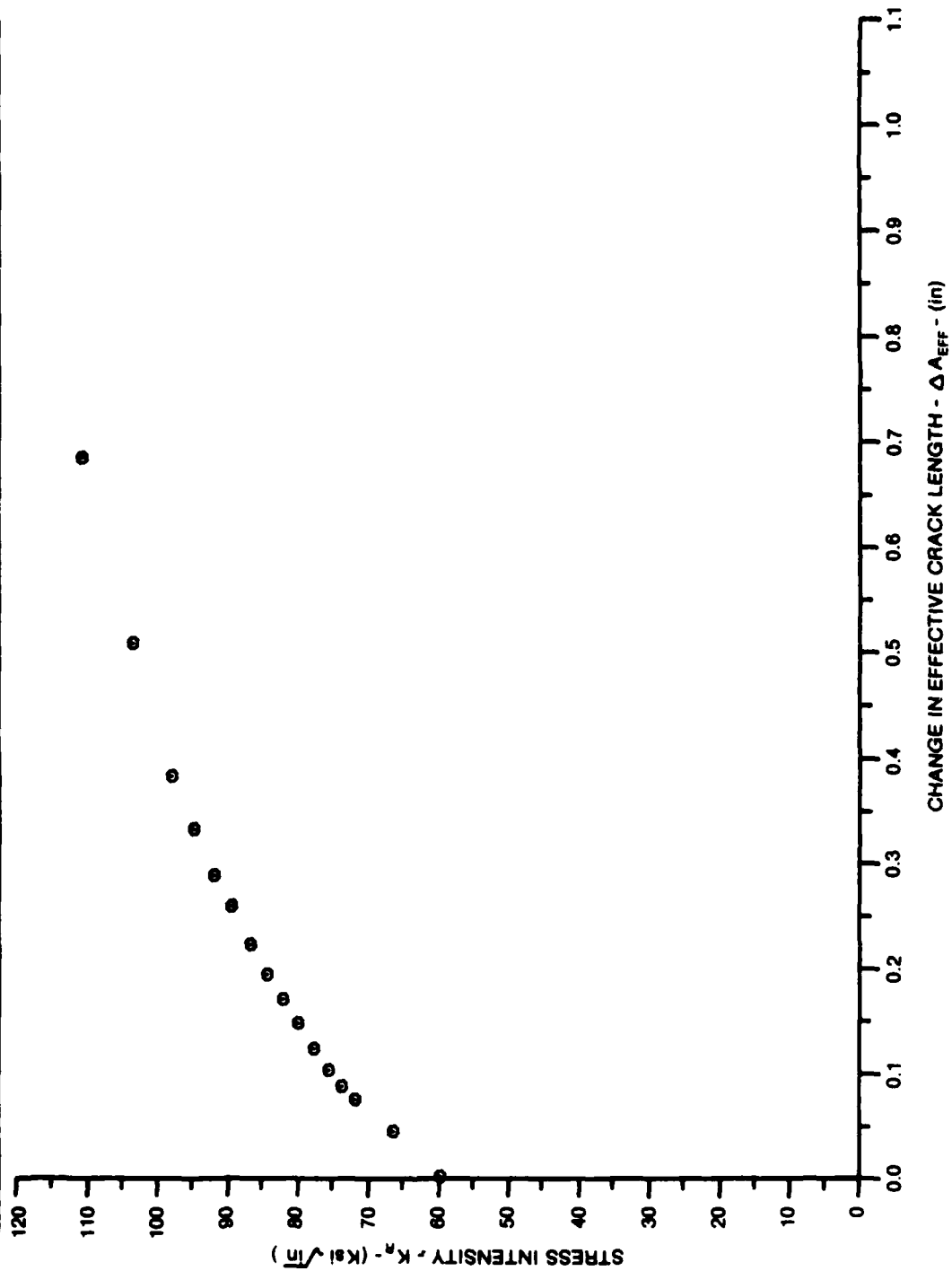


Figure 7.5.2.20

ALUM. ALLOY
2024

SPECIMEN THK: .120"  
 SPECIMEN WIDTH: 5.980"  
 $K_{IC}$  (KSI $\sqrt{IN}$ ): 91.8  
 REFERENCE: GD005

CONDITION/HT: T62 (GD)  
 FORM: .13" TH PLATE  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T

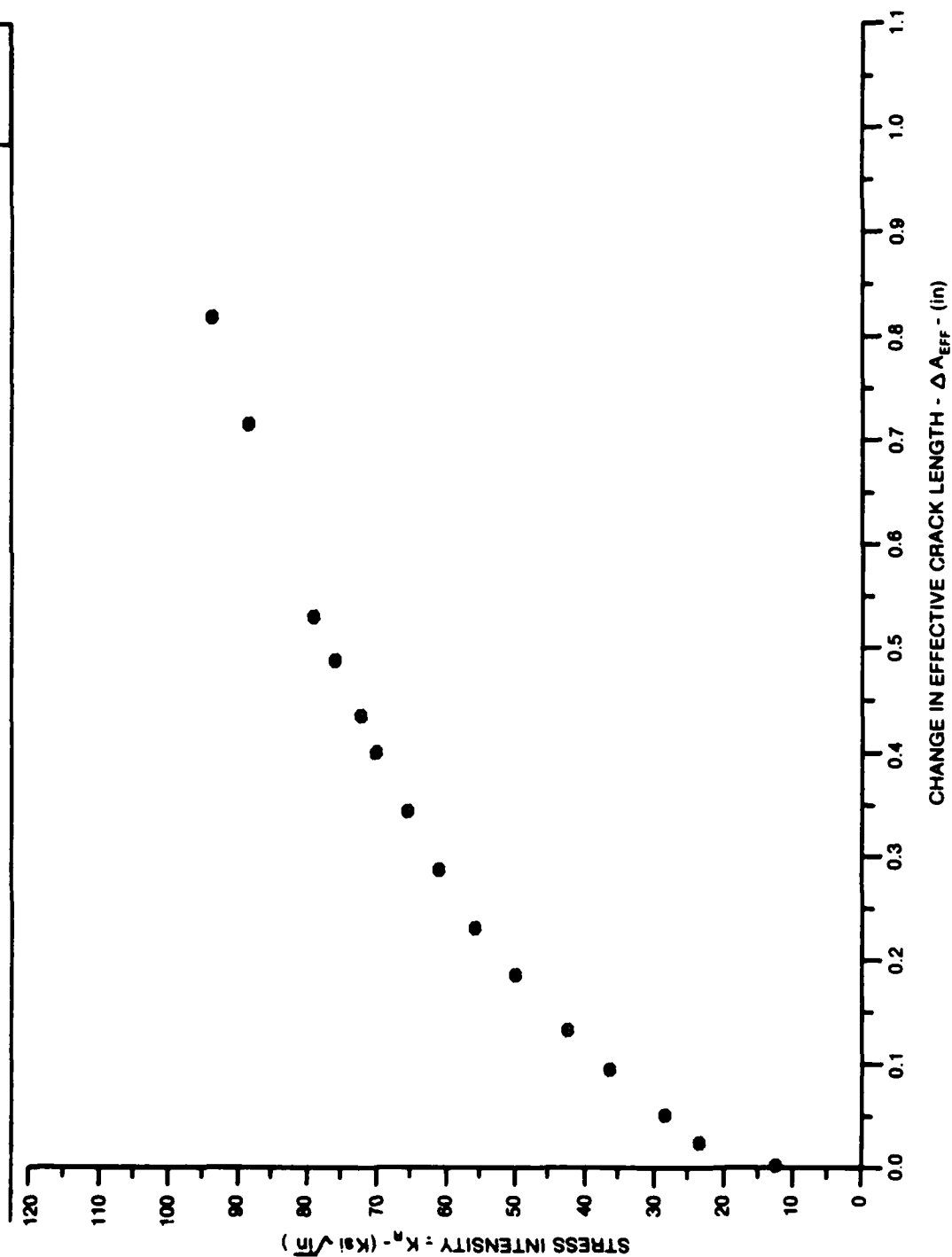


Figure 7.5.2.21

ALUM. ALLOY
2024

SPECIMEN THK: .128"  
 SPECIMEN WIDTH: 15.978"  
 $K_{IC}$  (Ksi- $\sqrt{\text{in}}$ ): 80.0  
 REFERENCE: GD005

CONDITION/HT: T62 (GQ)  
 FORM: .13" TH PLATE  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T

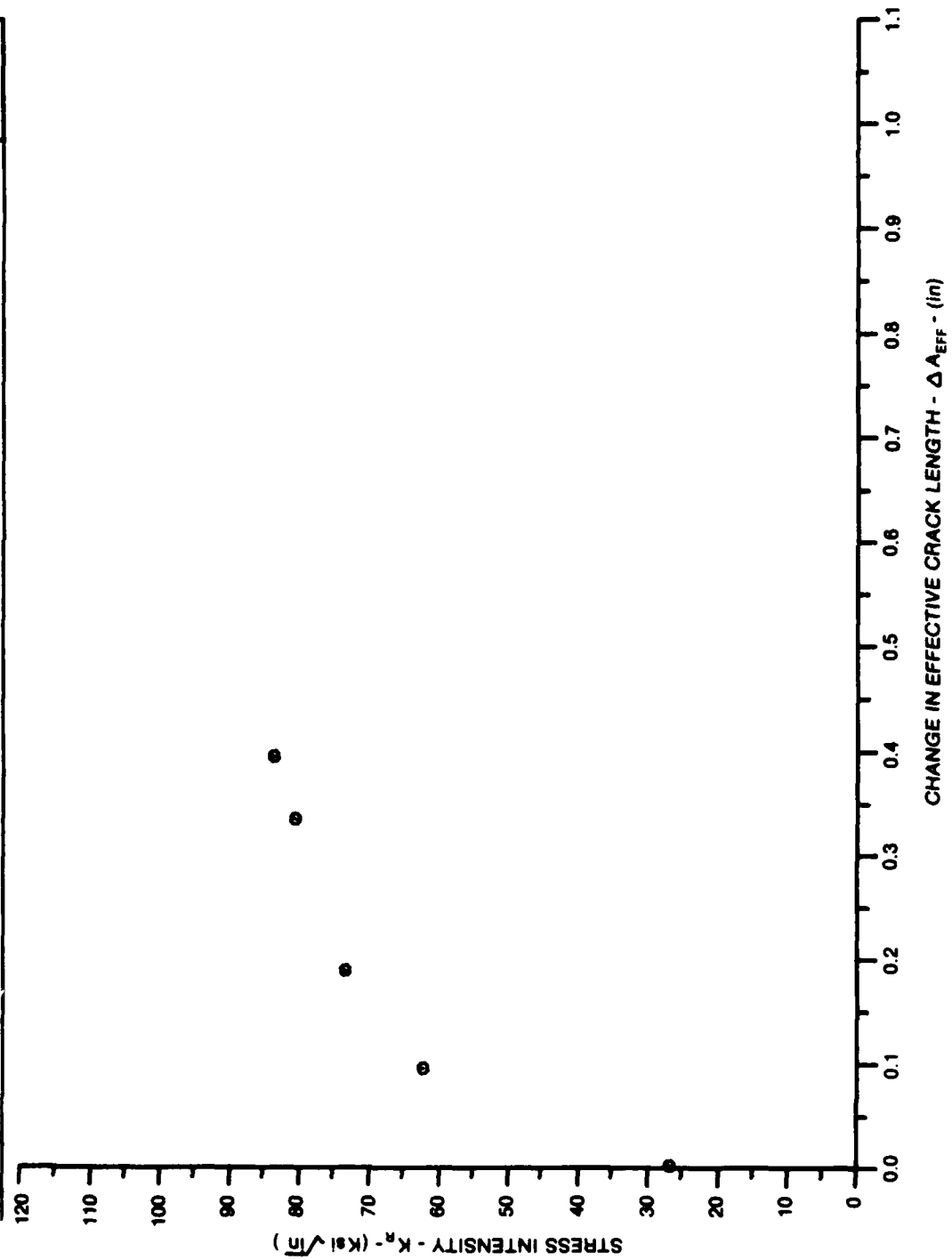


Figure 7.5.2.22

ALUM.  
ALLOY

2024

SPECIMEN THK: .128"  
SPECIMEN WIDTH: 10.000"  
 $K_C(Ksi\sqrt{in})$ : 136.0  
REFERENCE: GD005

CONDITION/HT: T62 (GD)  
FORM: .13" TH PLATE  
SPECIMEN TYPE: CCP  
ORIENTATION: L-T

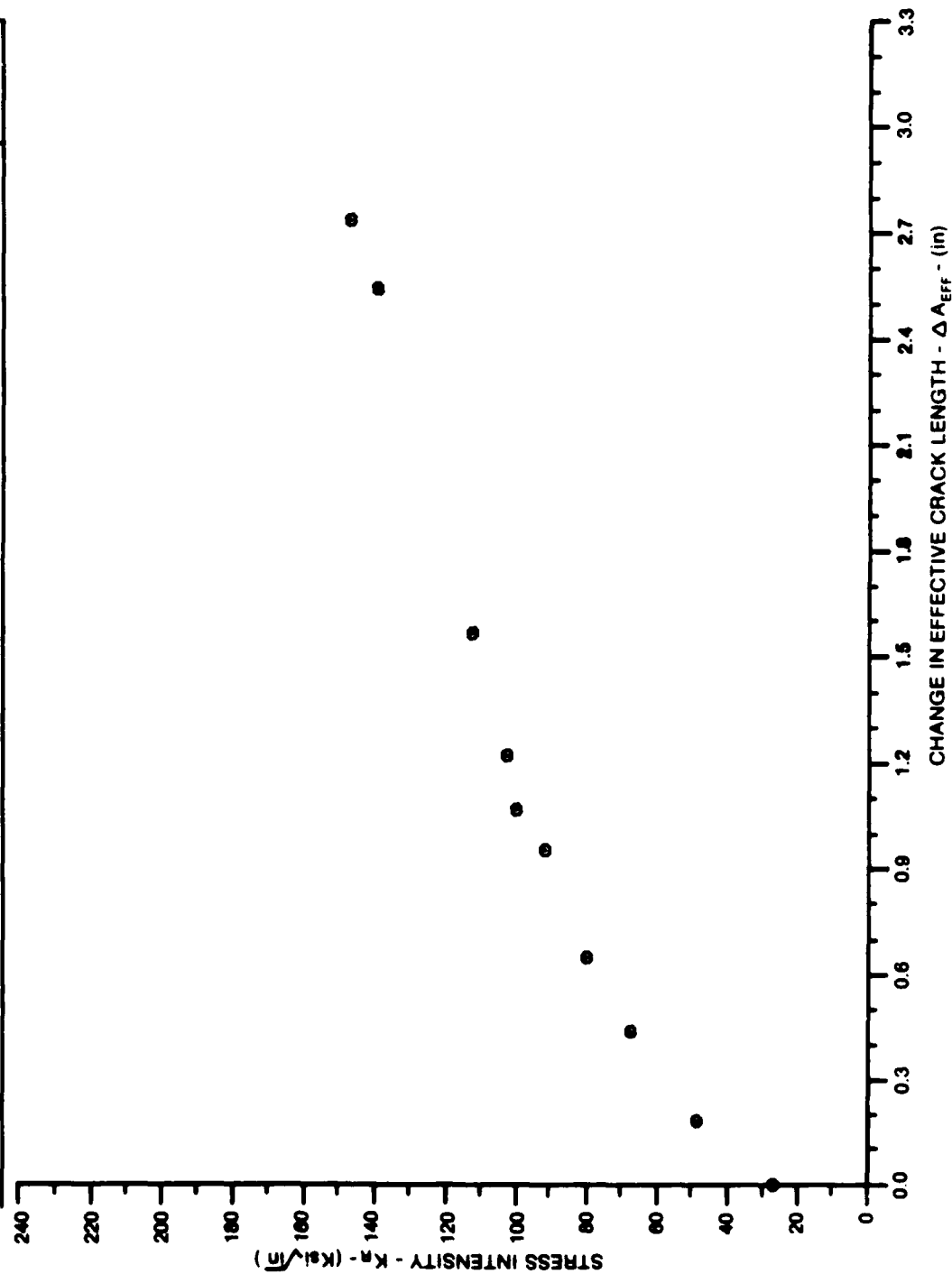


Figure 7.5.2.23

ALUM.  
ALLOY

2024

SPECIMEN THK: .125"  
SPECIMEN WIDTH: 5.998"  
 $K_{IC}$  (ksi $\sqrt{in}$ ): 62.8  
REFERENCE: GD005

CONDITION/HT: T62 (GD)  
FORM: .13" TH PLATE  
SPECIMEN TYPE: CCP  
ORIENTATION: T-L

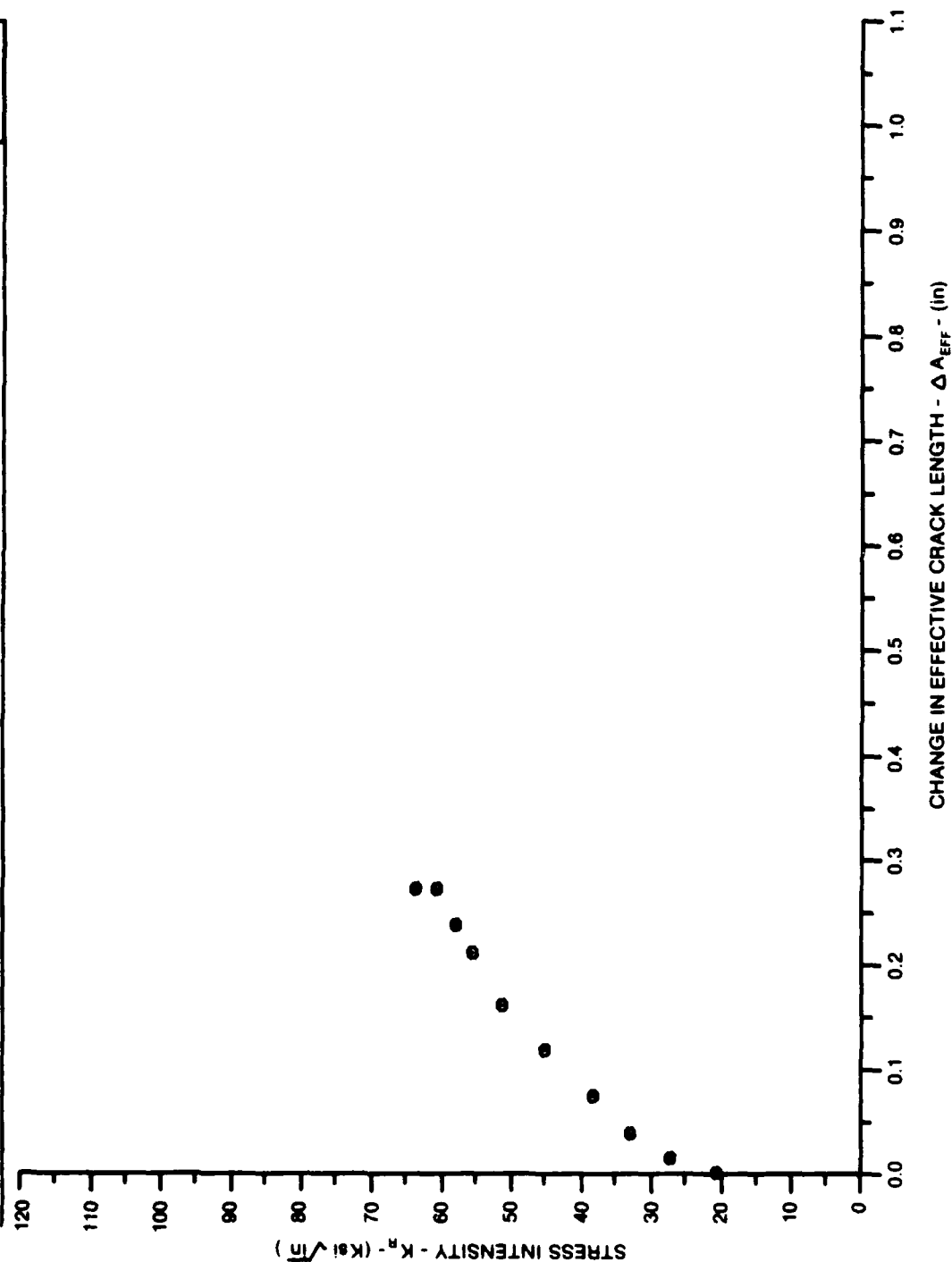


Figure 7.5.2.24



ALUM.  
ALLOY

2024

SPECIMEN THK: .125"  
SPECIMEN WIDTH: 5.000"  
 $K_{IC}$  (KSI $\sqrt{in}$ ): 84.8  
REFERENCE: GD005

CONDITION/HT: T62 (GD)  
FORM: .13" TH PLATE  
SPECIMEN TYPE: CCP  
ORIENTATION: T-L

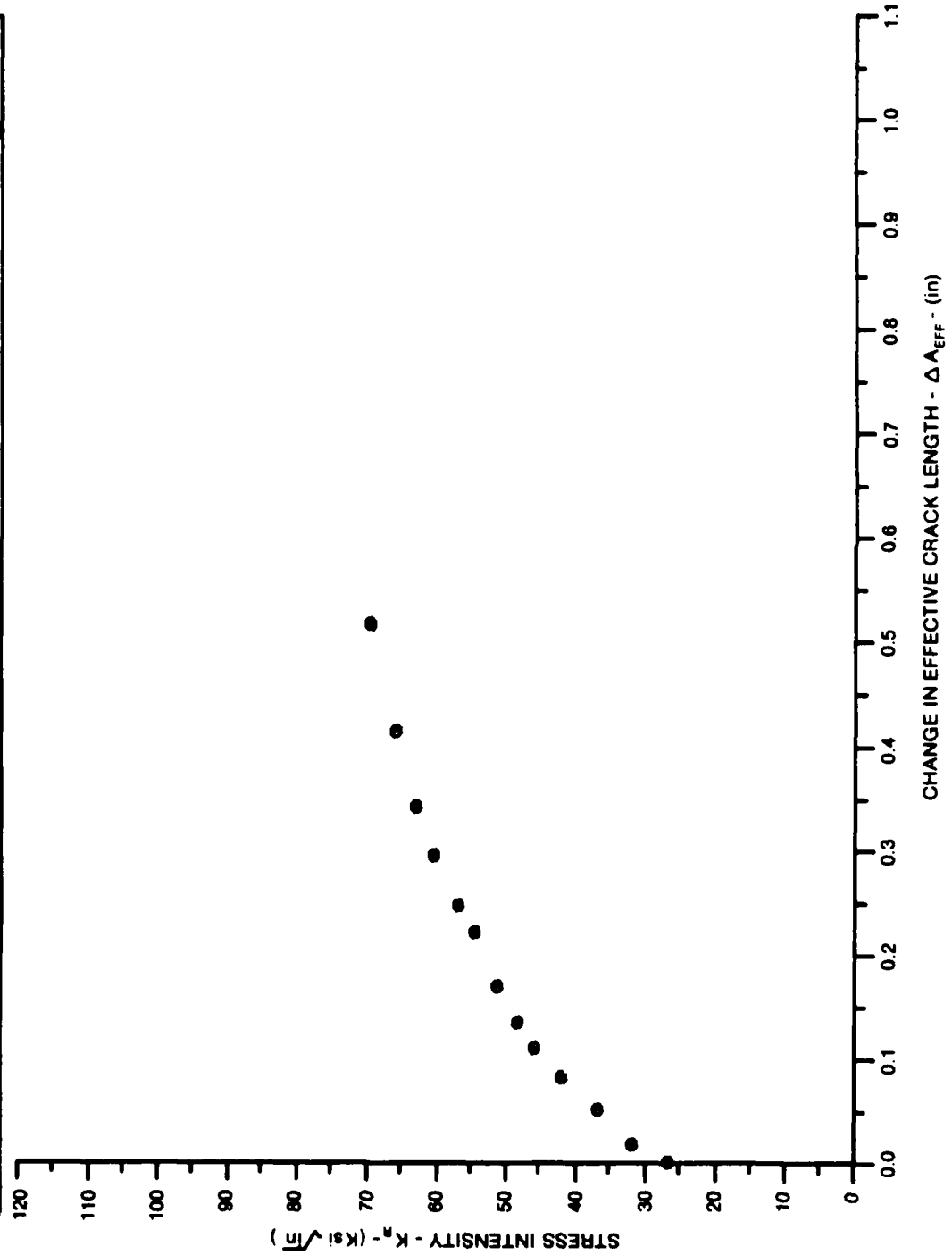


Figure 7.5.2.25

CONDITION/HT: T62 (WQ)  
 FORM: .13" TH PLATE  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T

SPECIMEN THK: .125"  
 SPECIMEN WIDTH: 6.000"  
 $K_{IC}$  (Ksi $\sqrt{in}$ ): 74.0  
 REFERENCE: GD005

ALUM.  
 ALLOY

2024

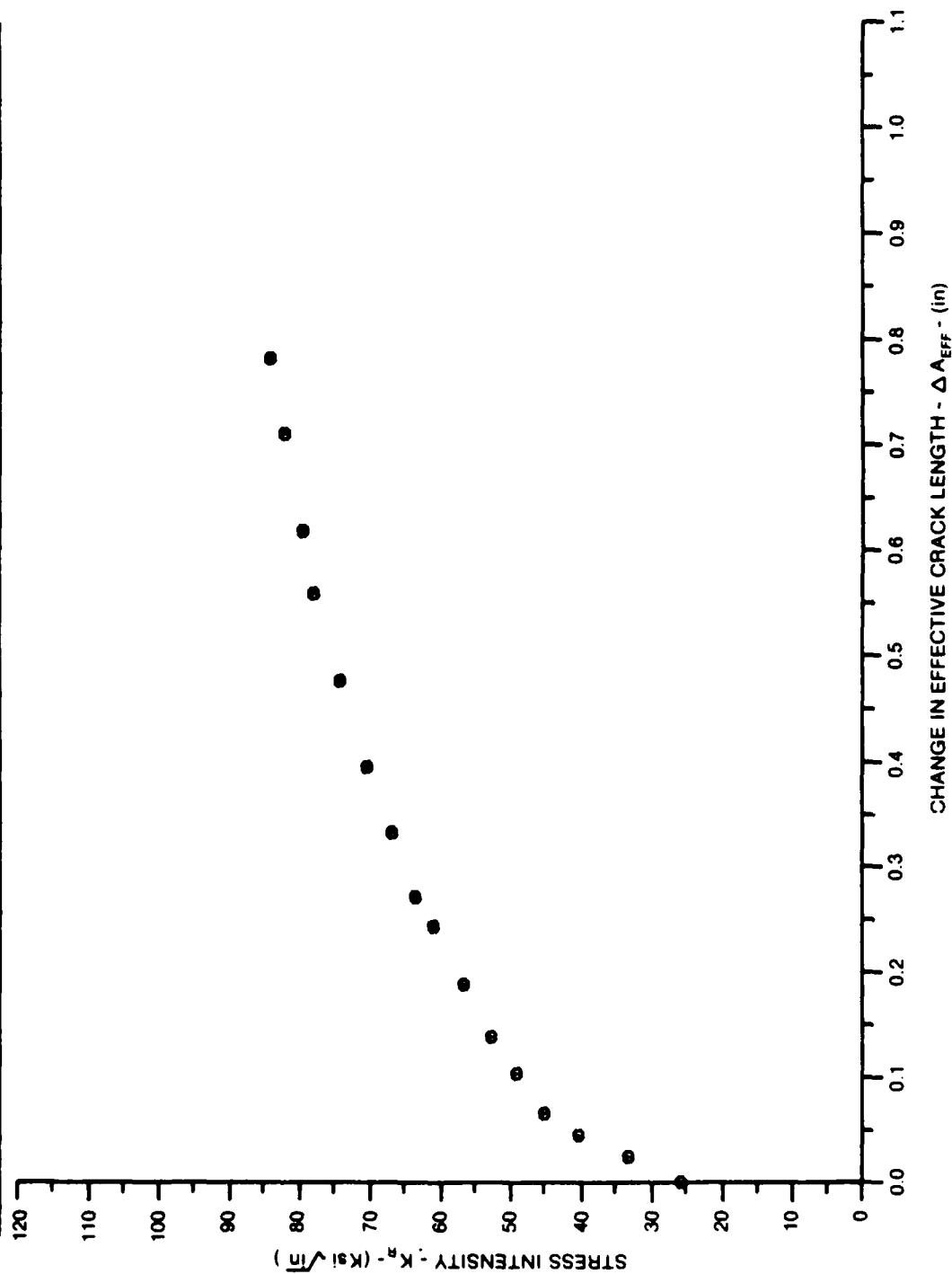


Figure 7.5.2.26

ALUM.  
ALLOY

2024

SPECIMEN THK: .126"  
SPECIMEN WIDTH: 5.988"  
 $K_0$  (ksi $\sqrt{in}$ ): 79.8  
REFERENCE: GD885

CONDITION/HT: T62 (VD)  
FORM: .13" TH PLATE  
SPECIMEN TYPE: CCP  
ORIENTATION: L-T

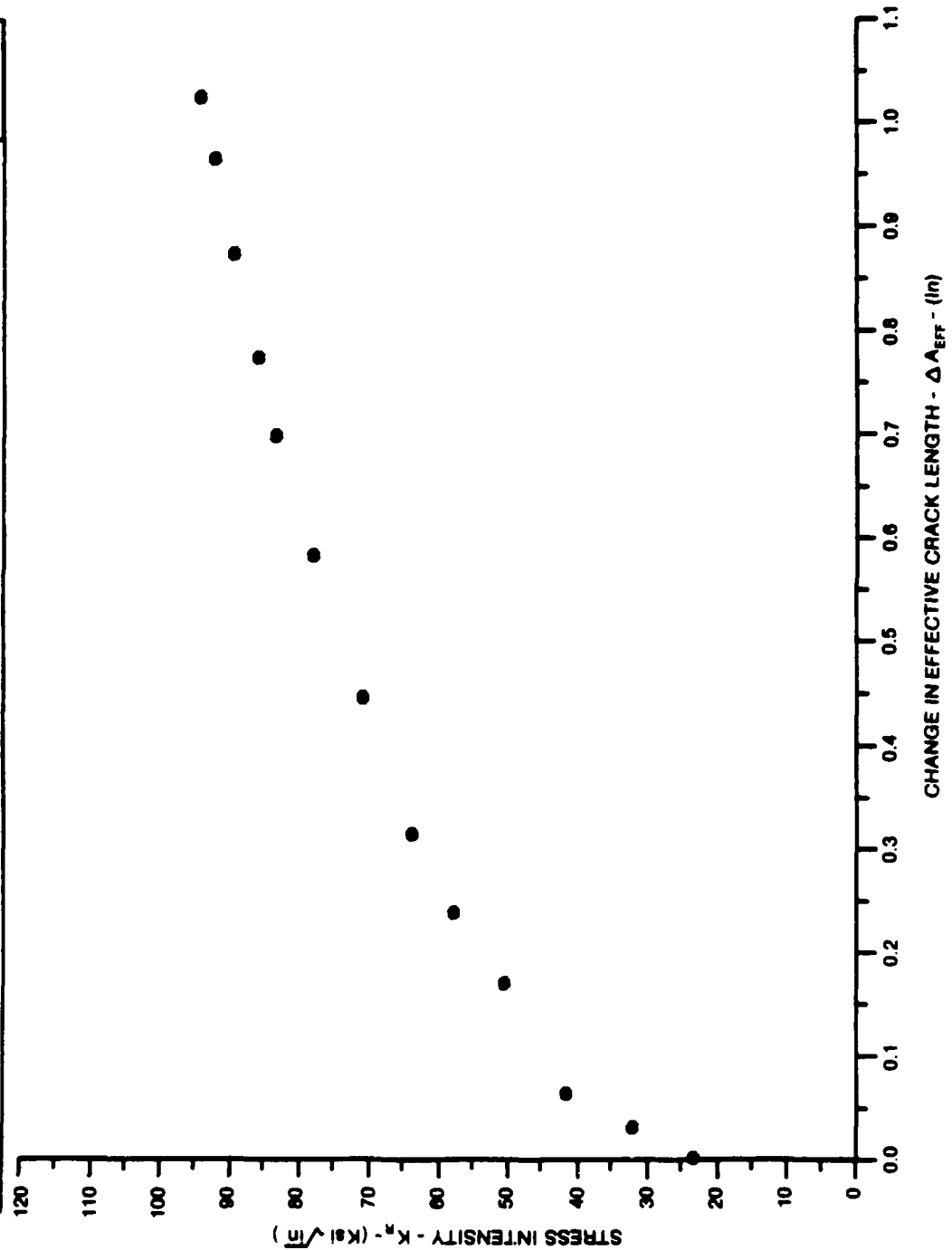


Figure 7.5.2.27

CONDITION/HT: T62 (WQ)  
 FORM: .13" TH PLATE  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T

SPECIMEN THK: .126"  
 SPECIMEN WIDTH: 15.999"  
 $K_C$  (Ksi $\sqrt{\text{in}}$ ): 139.0  
 REFERENCE: GD005

ALUM.  
 ALLOY  
 2024

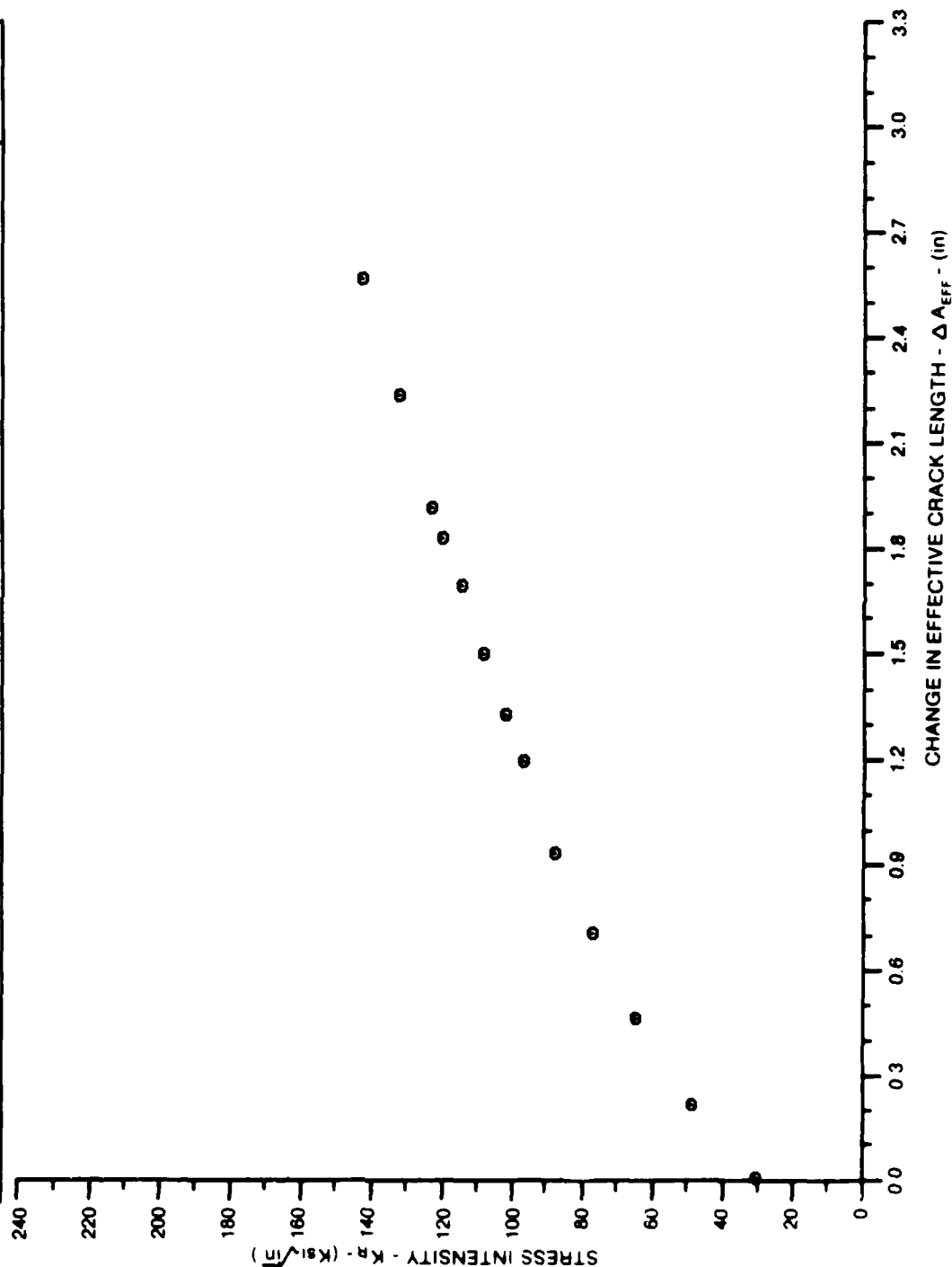


Figure 7.7.2.2a

ALUM.  
ALLOY

2024

SPECIMEN THK: .126"  
SPECIMEN WIDTH: 5.988"  
 $K_{IC}$  (Ksi $\sqrt{in}$ ): 70.9  
REFERENCE: GD005

CONDITION/HT: T62 (WQ)  
FORM: .13" TH PLATE  
SPECIMEN TYPE: CCP  
ORIENTATION: T-L

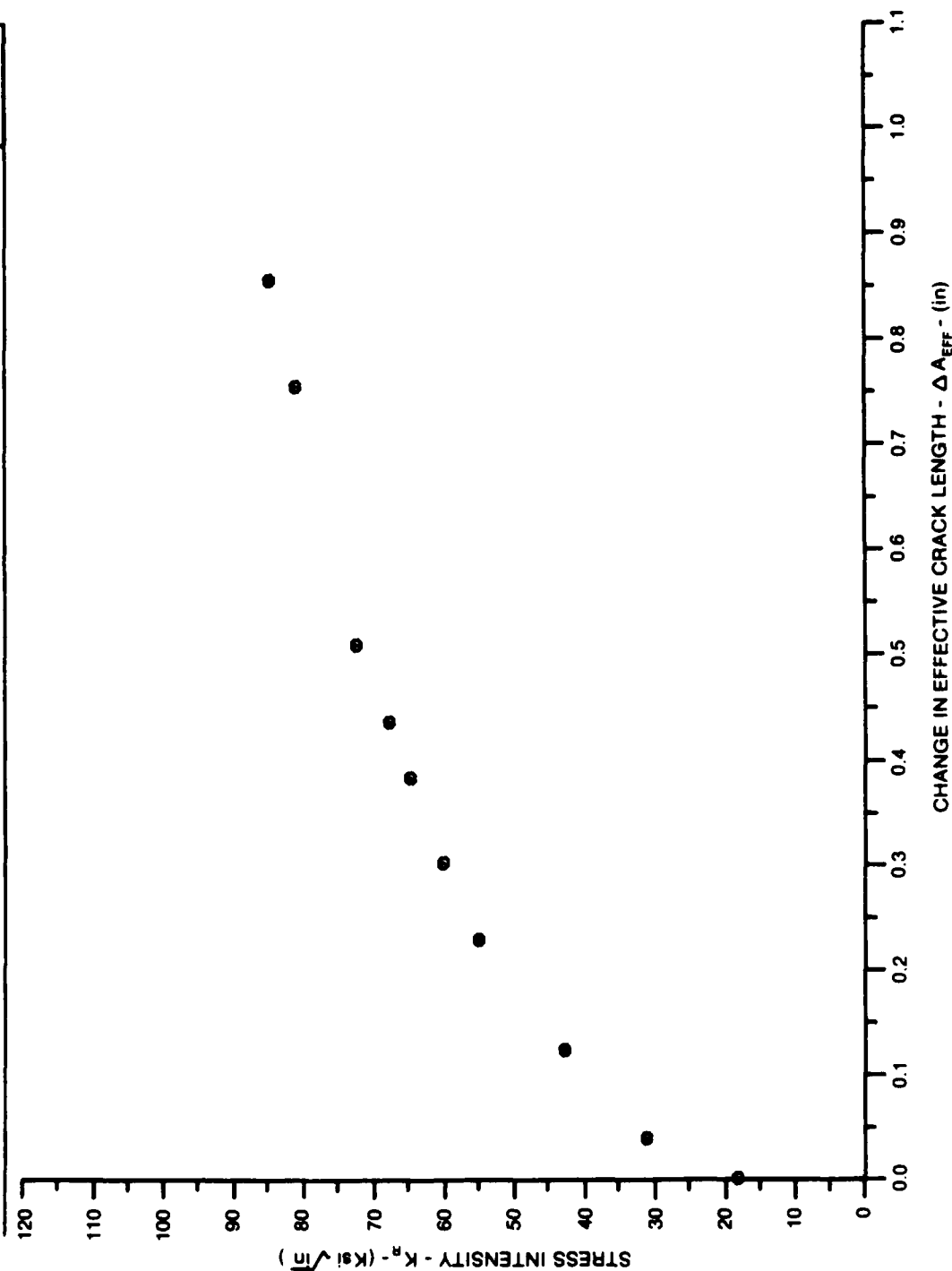


Figure 7.5.2.29

ALUM. ALLOY
2024

SPECIMEN THK: .128"  
 SPECIMEN WIDTH: 5.000"  
 $K_{IC}$  (KSI $\sqrt{in}$ ): 73.8  
 REFERENCE: G0005

CONDITION/HT: T62 (WQ)  
 FORM: .13" TH PLATE  
 SPECIMEN TYPE: CCP  
 ORIENTATION: T-L

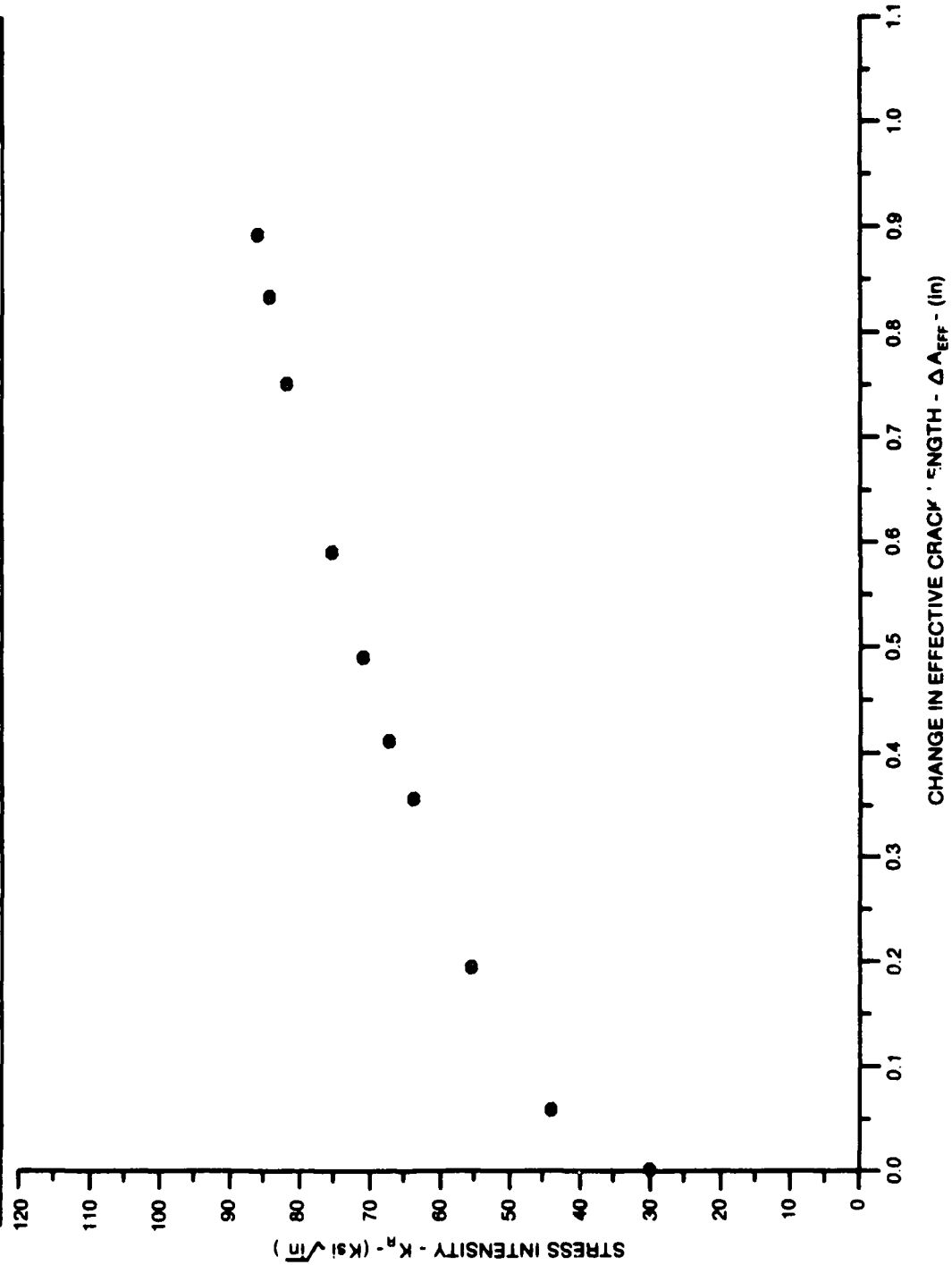


Figure 7.5.2.30

ALUM.  
ALLOY

2024

SPECIMEN THK: .125"  
SPECIMEN WIDTH: 5.988"  
 $K_{IC}$  (Ksi $\sqrt{in}$ ): 83.1  
REFERENCE: GD005

CONDITION/HT: T81  
FORM: .13" TH PLATE  
SPECIMEN TYPE: CCP  
ORIENTATION: L-T

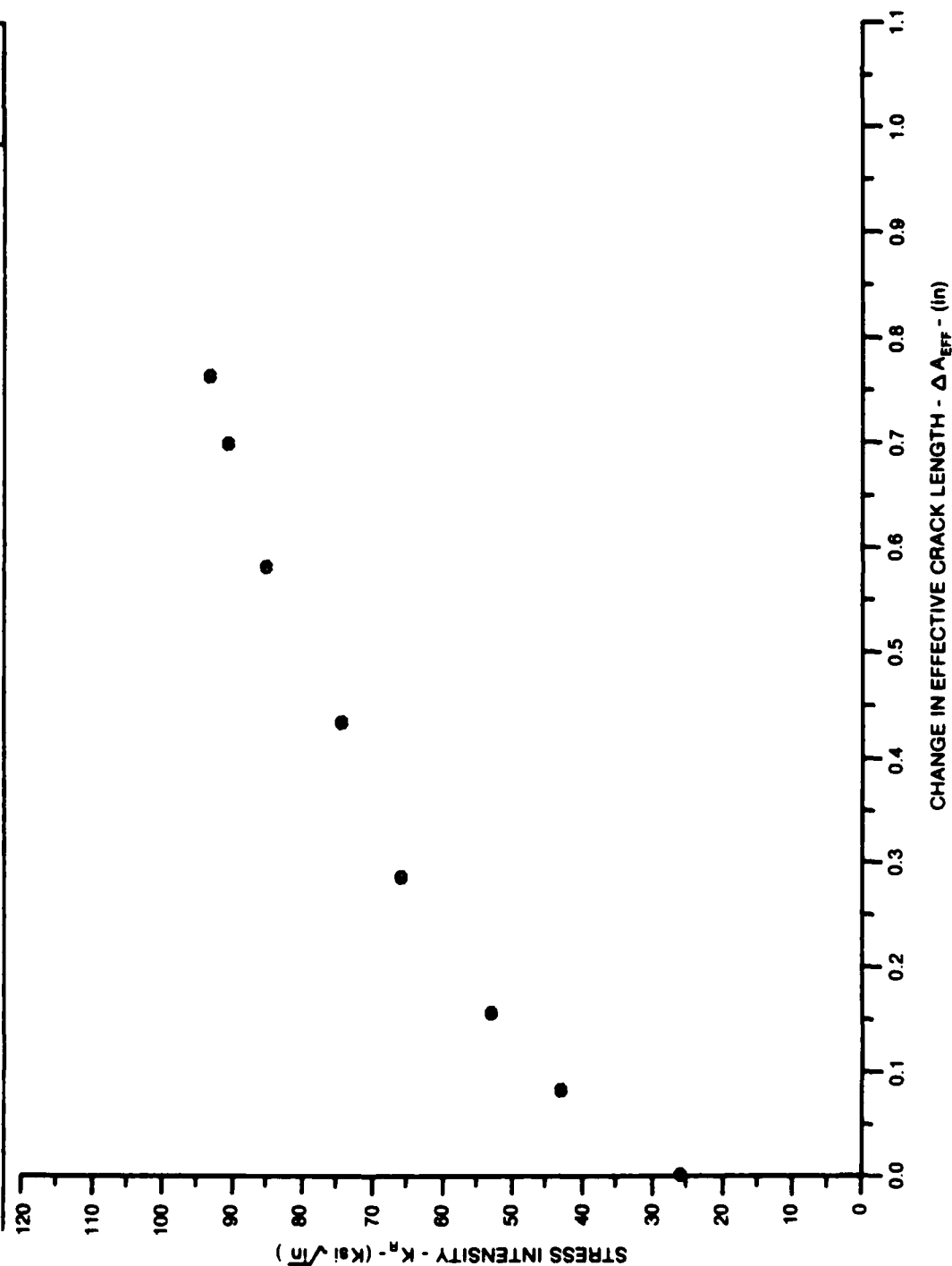


Figure 7.5.2.31

ALUM. ALLOY
2024

SPECIMEN THK: .126"  
 SPECIMEN WIDTH: 5.998"  
 $K_C$  (ksi $\sqrt{in}$ ): 82.6  
 REFERENCE: GD005

CONDITION/HT: T81  
 FORM: .13" TH PLATE  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T

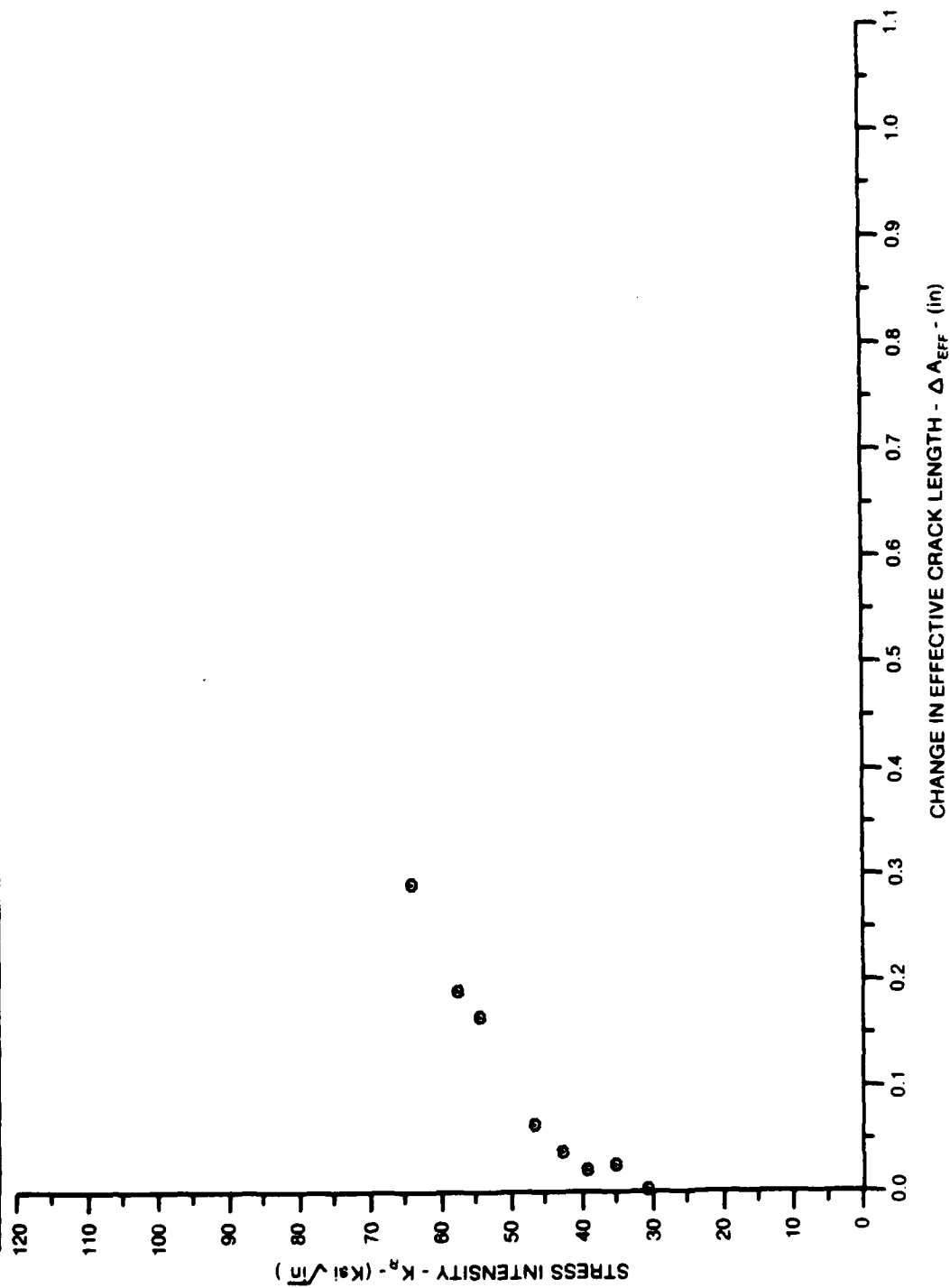


Figure 7.5.2.32



CONDITION/HT: T81  
 FORM: .13" TH PLATE  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T

SPECIMEN THK: .128"  
 SPECIMEN WIDTH: 5.998"  
 $K_C$  (ksi $\sqrt{in}$ ): 68.0  
 REFERENCE: GD885

ALUM.  
 ALLOY

2024

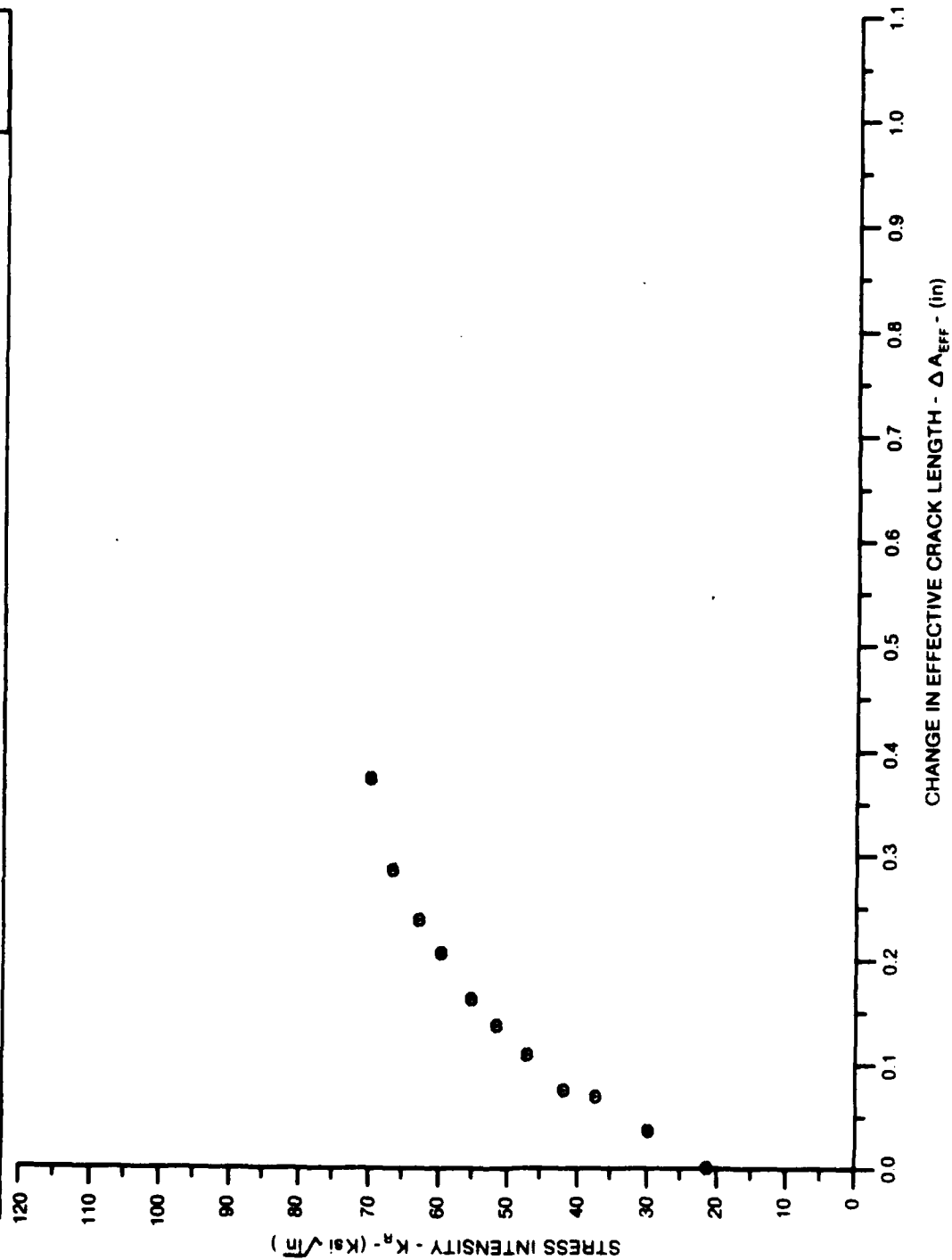


Figure 7.5.2.33

ALUM.  
ALLOY

2024

SPECIMEN THK: .126"  
SPECIMEN WIDTH: 5.000"  
 $K_{IC}$  (ksi√in): 50.8  
REFERENCE: G0005

CONDITION/HT: T81  
FORM: .13" TH PLATE  
SPECIMEN TYPE: CCP  
ORIENTATION: T-L

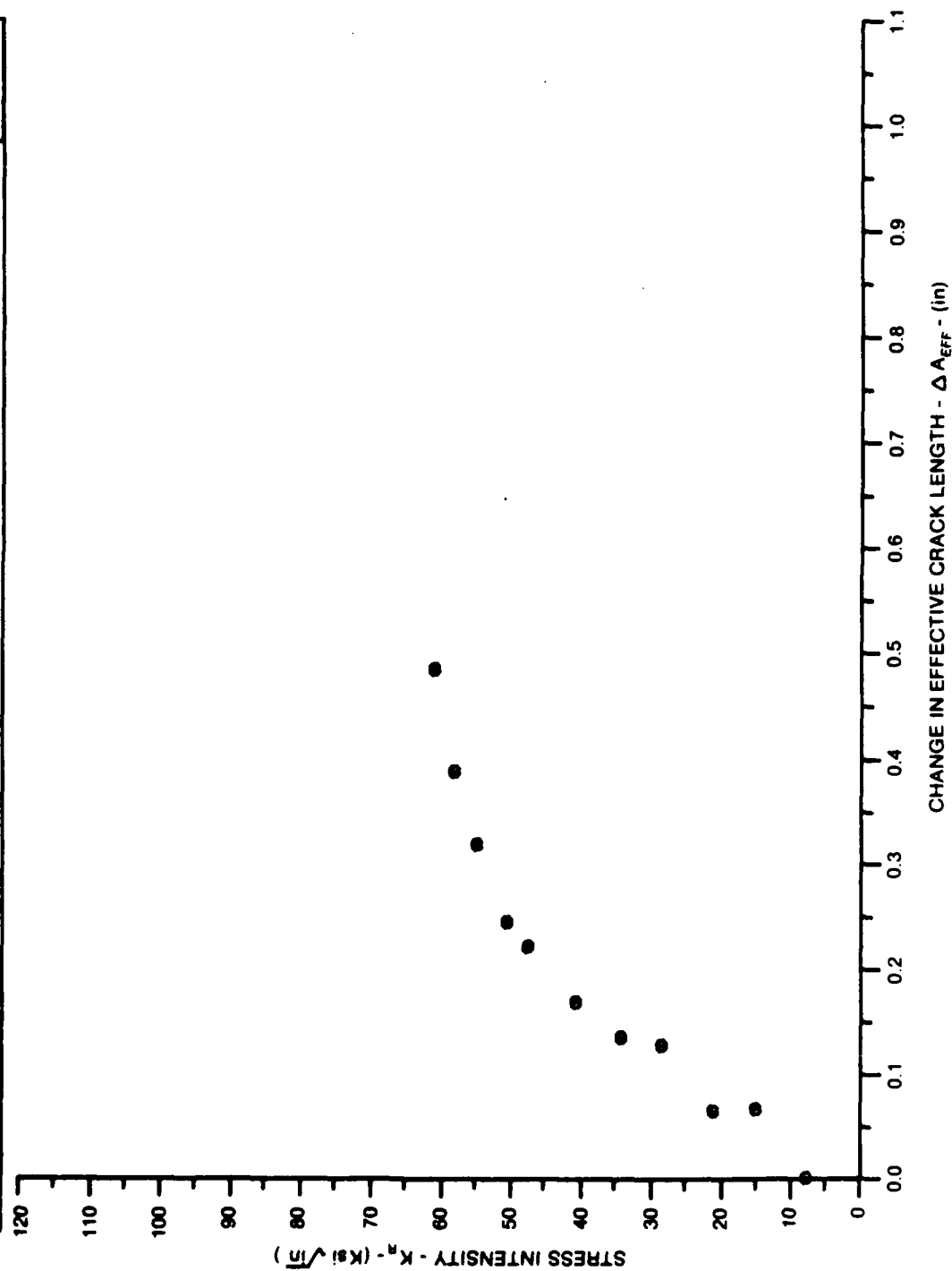


Figure 7.5.2.34

ALUM. ALLOY
2024

SPECIMEN THK: .126"  
 SPECIMEN WIDTH: 6.010"  
 $K_{IC}$  (KSI $\sqrt{in}$ ): 58.8  
 REFERENCE: GD0005

CONDITION/HT: T81  
 FORM: .13" TH PLATE  
 SPECIMEN TYPE: CCP  
 ORIENTATION: T-L

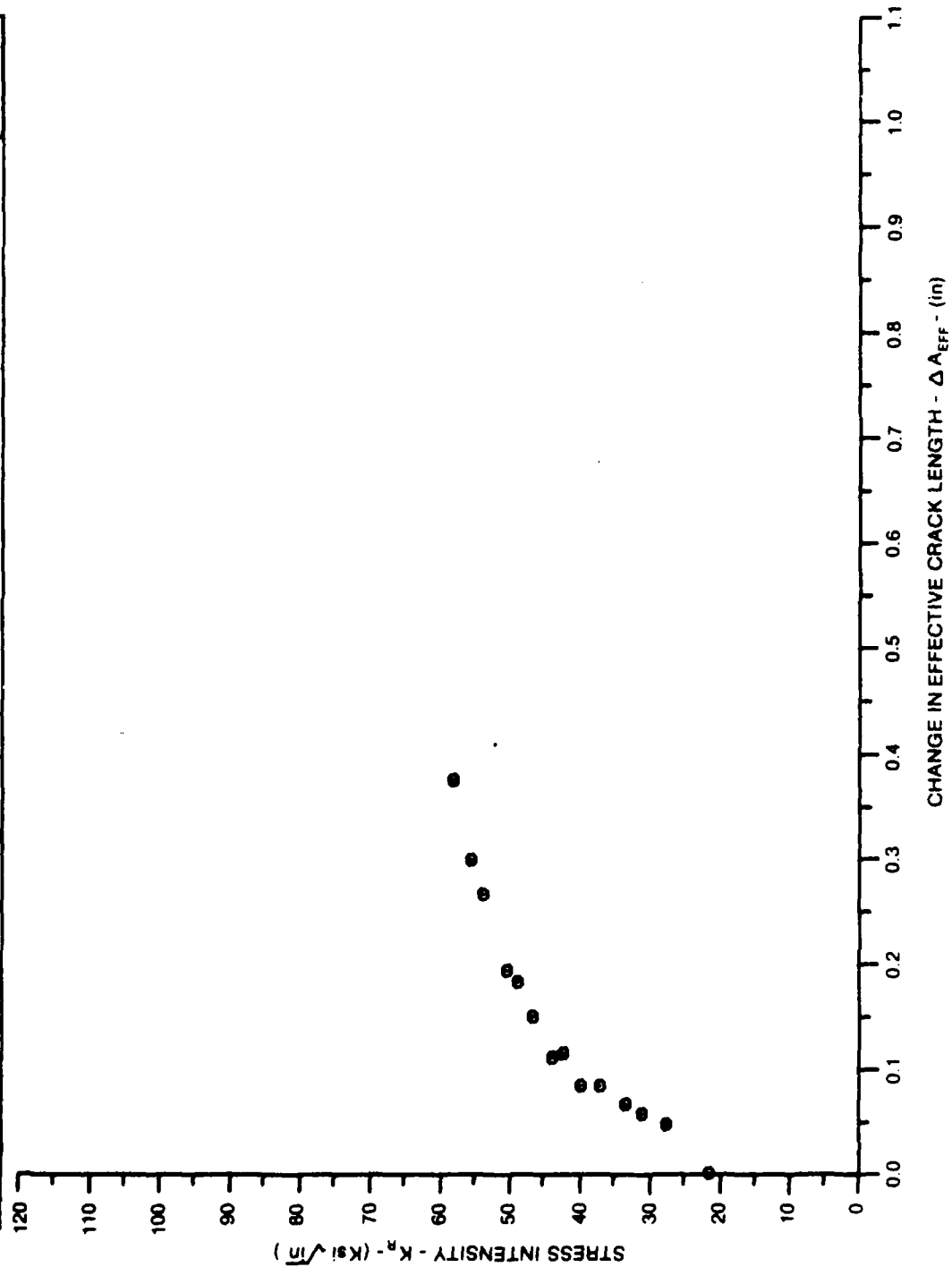


Figure 7.5.2.35

TABLE 7.5.3.1

**FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR**

**DATA ASSOCIATED WITH FIGURE 7.5.3.1 INDICATING EFFECT**

**OF STRESS RATIO**

<b>MATERIAL: ALUMINUM</b>		<b>2024</b>			
<b>CONDITION: T3</b>					
<b>ENVIRONMENT: R. T. , LAB AIR</b>					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		R=+0. 05	R=+0. 40	R=+0. 60	
A:	2. 63 :	. 11			
DELTA K B:	4. 24 :		. 32		
MIN C:	3. 58 :			. 25	
D:					
	3. 00 :	. 110			
	3. 50 :	. 120			
	4. 00 :	. 146			
	5. 00 :	. 258	. 946	1. 22	
	6. 00 :	. 497	1. 92		
	7. 00 :	. 976			
	8. 00 :	1. 89			
	9. 00 :	3. 57			
A:	9. 56 :	5. 03			
DELTA K B:	6. 24 :		2. 19		
MAX C:	5. 02 :			1. 24	
D:					
<b>ROOT MEAN SQUARE</b>		33. 02	2. 95	8. 28	
<b>PERCENT ERROR</b>					
LIFE	0. 0-0. 5				
PREDICTION	0. 5-0. 8	1			
RATIO	0. 8-1. 25	3	1	1	
SUMMARY	1. 25-2. 0	1			
(NP/NA)	>2. 0				

CONDITION/HT: T3  
 FORM: SHEET  
 SPECIMEN TYPE: CCP  
 ORIENTATION: T-L  
 FREQUENCY: 30.00 HZ  
 ENVIRONMENT: R. T., LAB AIR

YIELD STRENGTH: 47.2 KSI  
 ULT. STRENGTH: 68.2 KSI  
 SPECIMEN THK: 0.090"  
 SPECIMEN WIDTH: 13.985- 14.030"  
 REFERENCES: EFM01

ALUM.  
 ALLOY

2024

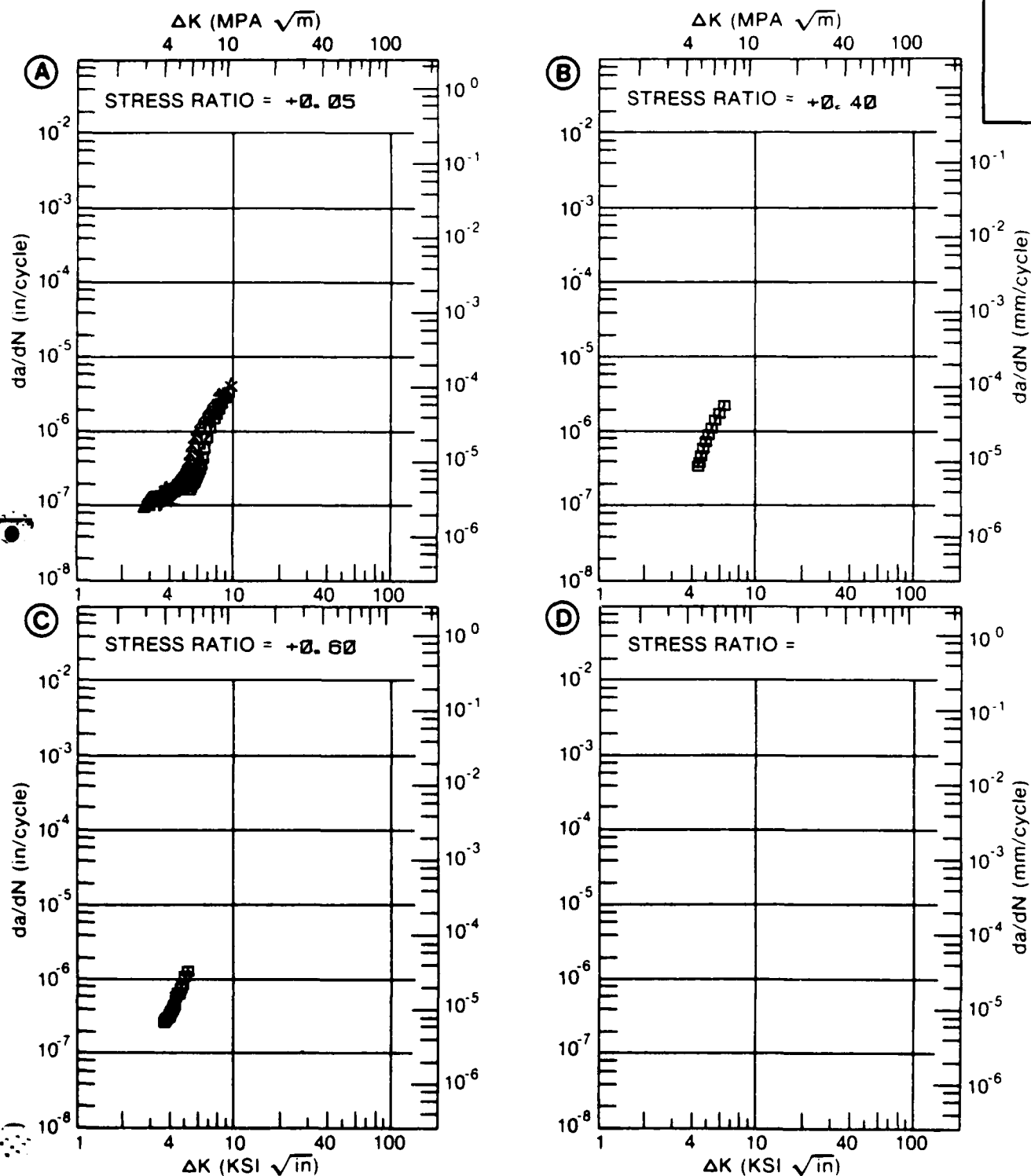


Figure 7.5.3.1

TABLE 7.5.3.2

**FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR**

**DATA ASSOCIATED WITH FIGURE 7.5.3.2 INDICATING EFFECT  
OF STRESS RATIO**

MATERIAL: ALUMINUM		2024			
CONDITION: T3					
ENVIRONMENT: + 140F, AIR					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		R=+0.40	R=+0.70		
DELTA K MIN	A: 3.16	.131			
	B: 3.05		.151		
	C:				
	D:				
	3.50	.181	.343		
	4.00	.301	.679		
	5.00	.794	1.77		
	6.00	1.80	3.45		
	7.00	3.40	5.85		
	8.00	5.48	9.27		
DELTA K MAX	9.00	7.65	14.2		
	10.00	9.43	21.3		
	A: 11.11	10.5			
	B: 11.74		42.7		
	C:				
	D:				
ROOT MEAN SQUARE		15.62	7.32		
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25	1	1		
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION/HT: T3  
 FORM: SHEET  
 SPECIMEN TYPE: CCP  
 ORIENTATION: T-L  
 FREQUENCY: 5.00-10.00 HZ  
 ENVIRONMENT: +140° F, AIR

YIELD STRENGTH: 47.2 KSI  
 ULT. STRENGTH: 68.2 KSI  
 SPECIMEN THK: 0.090"  
 SPECIMEN WIDTH: 36.000"  
 REFERENCES: EFM01

ALUM.  
ALLOY

2024

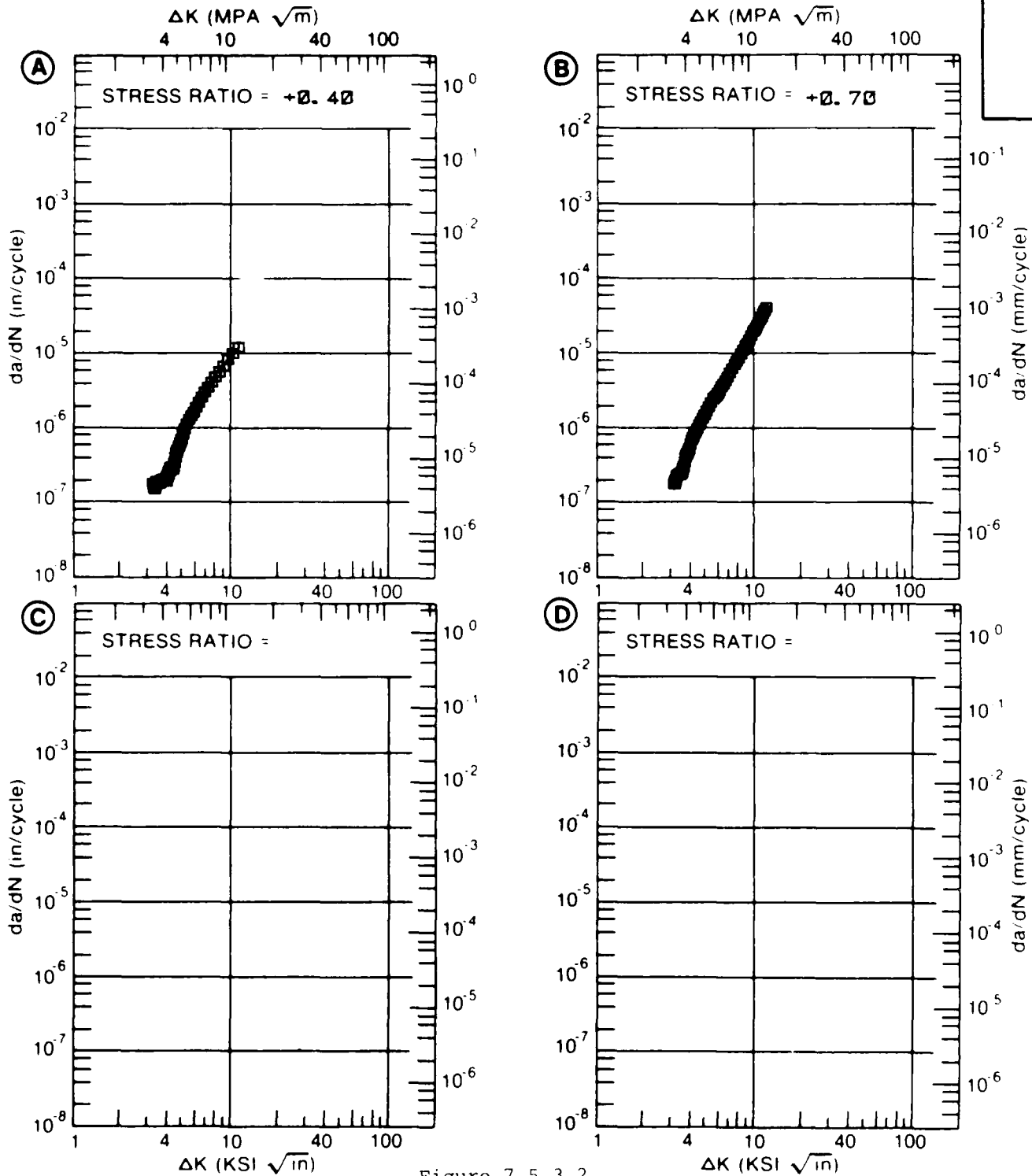


Figure 7.5.3.2

TABLE 7.5.3.3

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.5.3.3 INDICATING EFFECT

OF STRESS RATIO

MATERIAL: ALUMINUM 2024  
CONDITION: T3  
ENVIRONMENT: R. T. , LAB AIR

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		R=+0.33			
DELTA K MIN	A:	12.30	16.4		
	B:				
	C:				
	D:				
		13.00	19.3		
		16.00	48.3		
DELTA K MAX		20.00	188.		
		25.00	887.		
		30.00	3138.		
	A:	31.48	4312.		
	B:				
	C:				
	D:				

ROOT MEAN SQUARE 22.14  
PERCENT ERROR

LIFE 0.0-0.5  
PREDICTION 0.5-0.8 2  
RATIO 0.8-1.25 4  
SUMMARY 1.25-2.0  
(NP/NA) >2.0



CONDITION/HT: T3  
 FORM: 0.04" TH SHEET  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T  
 FREQUENCY: 3.33 HZ  
 ENVIRONMENT: R.T., LAB AIR

YIELD STRENGTH: 45.0 KSI  
 ULT. STRENGTH: 69.0 KSI  
 SPECIMEN THK: 0.039"  
 SPECIMEN WIDTH: 16.000"  
 REFERENCES: 87398

ALUM.  
ALLOY

2024

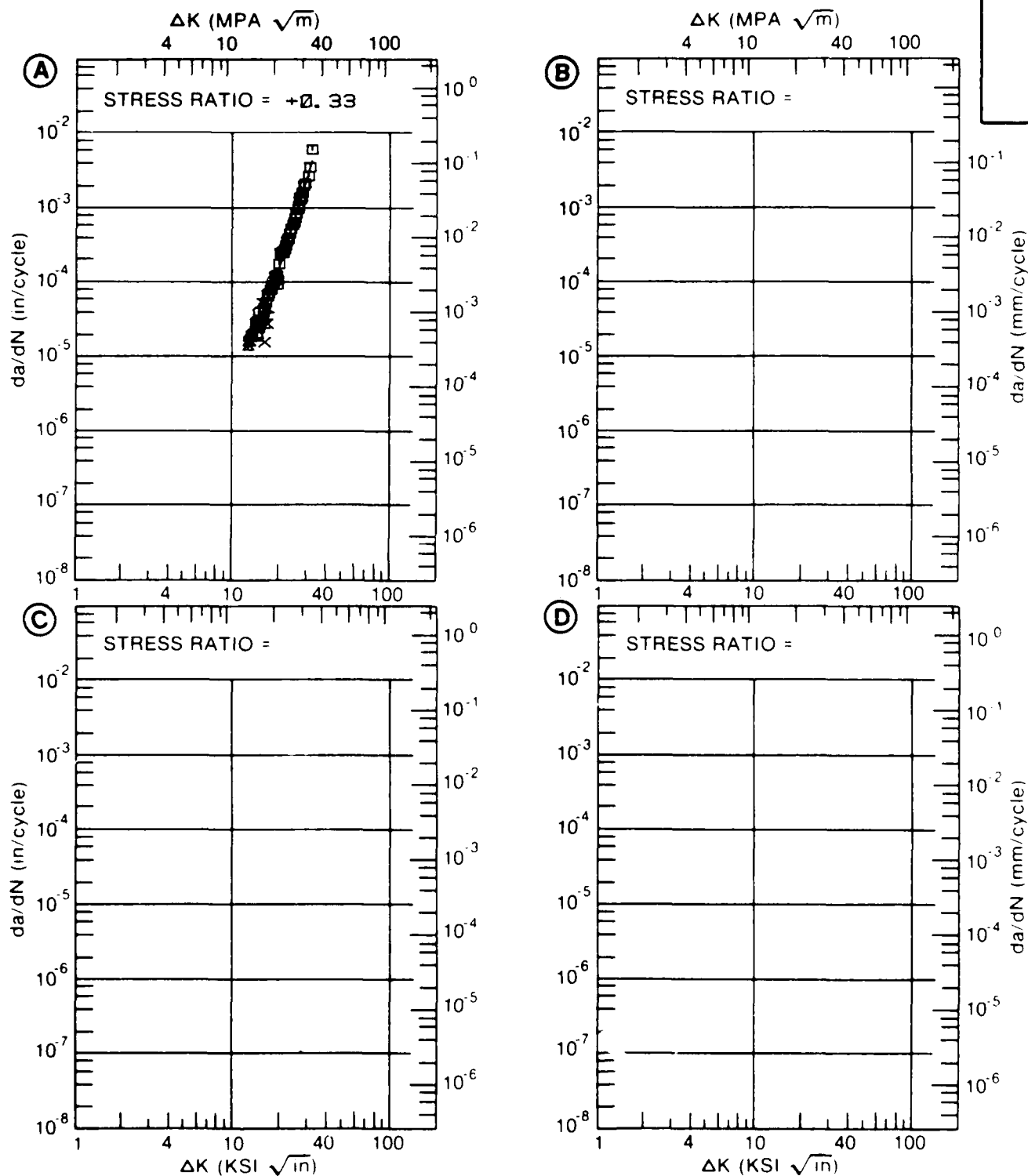


Figure 7.5.3.3

TABLE 7.5.3.4

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.5.3.4 INDICATING EFFECT

OF STRESS RATIO

MATERIAL: ALUMINUM 2024  
CONDITION: T3  
ENVIRONMENT: R.T., LAB AIR

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		R=+0.20			
DELTA K MIN	A: 4.73	.0896			
	B:				
	C:				
	D:				
	5.00	.219			
	6.00	2.20			
	7.00	4.76			
	8.00	6.90			
	9.00	8.55			
	10.00	9.72			
DELTA K MAX	13.00	12.1			
	16.00	15.6			
	20.00	27.9			
	25.00	85.0			
	A: 27.13	153.			
	B:				
		C:			
		D:			

ROOT MEAN SQUARE 17.00  
PERCENT ERROR

LIFE 0.0-0.5  
PREDICTION 0.5-0.8 2  
RATIO 0.8-1.25  
SUMMARY 1.25-2.0  
(NP/NA) >2.0

CONDITION/HT: T3  
 FORM: 0.09" TH SHEET  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T  
 FREQUENCY: 10.00 HZ  
 ENVIRONMENT: R.T., LAB AIR

YIELD STRENGTH:  
 ULT. STRENGTH:  
 SPECIMEN THK: 0.090"  
 SPECIMEN WIDTH: 4.010"  
 REFERENCES: FR001

ALUM.  
 ALLOY

2024

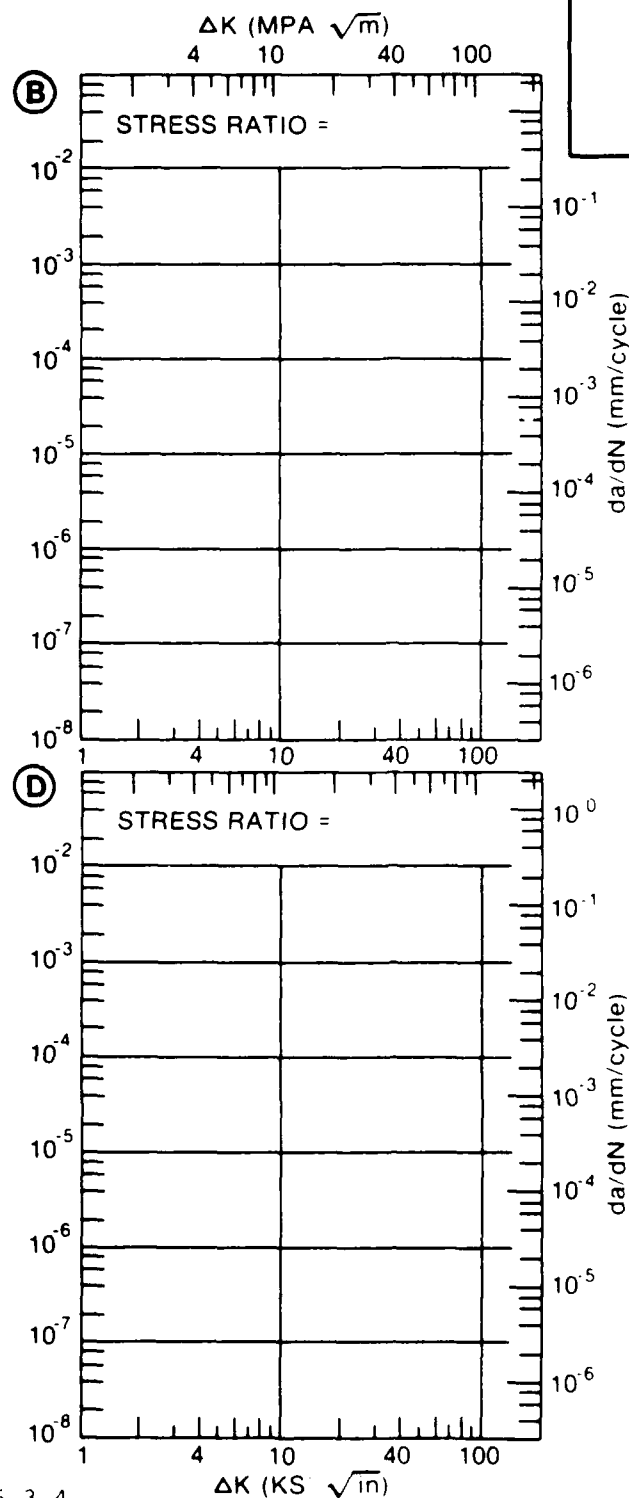
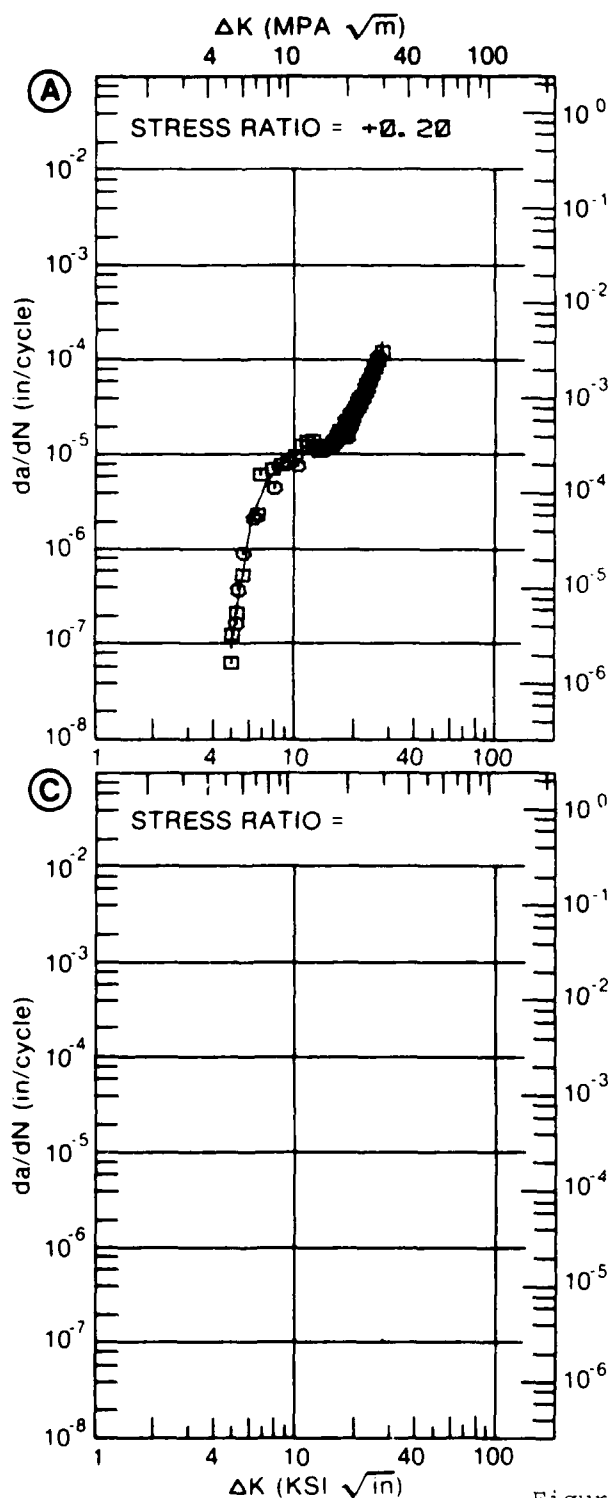


Figure 7.5.3.4

TABLE 7.5.3.5

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.5.3.5 INDICATING EFFECT  
OF STRESS RATIO

MATERIAL: ALUMINUM 2024  
CONDITION: T3  
ENVIRONMENT: R.T. , LAB AIR

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		R=+0.00			
DELTA K MIN	A:	16.84	15.3		
	B:				
	C:				
	D:				
		20.00	28.6		
		25.00	76.3		
		30.00	184.		
		35.00	390.		
DELTA K MAX	A:	35.36	410.		
	B:				
	C:				
	D:				

ROOT MEAN SQUARE 19.64  
PERCENT ERROR

LIFE	0.0-0.5	
PREDICTION	0.5-0.8	1
RATIO	0.8-1.25	7
SUMMARY	1.25-2.0	
(NP/NA)	>2.0	

CONDITION/HT: T3  
 FORM: 0.13" TH SHEET  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T  
 FREQUENCY: 13.30 HZ  
 ENVIRONMENT: R.T., LAB AIR

YIELD STRENGTH: 50.0 KSI  
 ULT. STRENGTH: 68.2 KSI  
 SPECIMEN THK: 0.125- 0.126"  
 SPECIMEN WIDTH: 4.000"  
 REFERENCES: 86213

ALUM.  
 ALLOY

2024

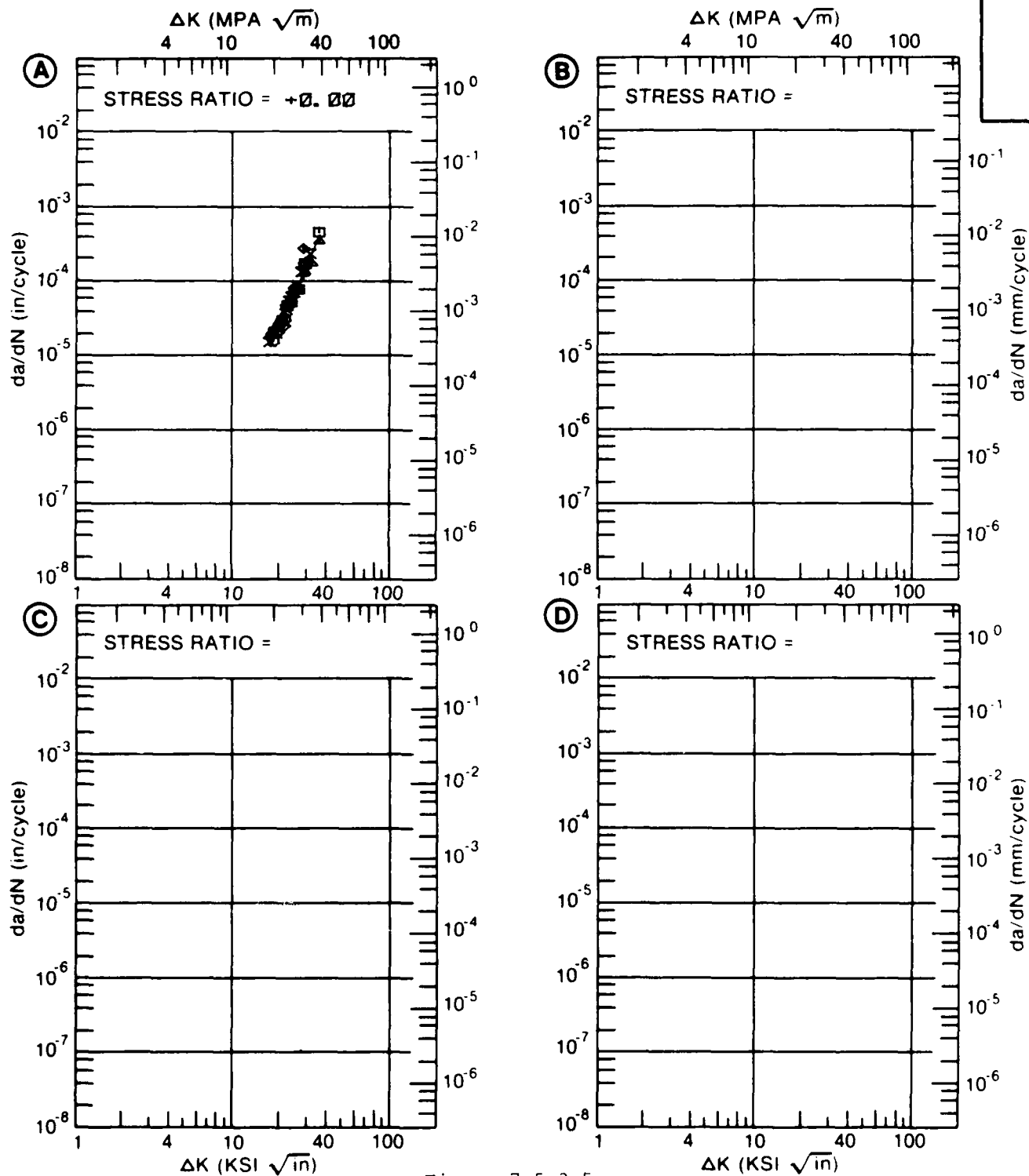


Figure 7.5.3.5

TABLE 7.5.3.6

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTORDATA ASSOCIATED WITH FIGURE 7.5.3.6 INDICATING EFFECT  
OF ENVIRONMENTMATERIAL: ALUMINUM  
CONDITION: T3

2024

DELTA K  
(KSI\*IN\*\*1/2)

DA/DN (10\*\*-6 IN./CYCLE)

A

B

C

D

E= R. T.  
90% R. H.DELTA K A: 13.10  
MIN B:  
C:  
D:

10.6

16.00

18.4

20.00

35.3

25.00

71.3

30.00

133.

35.00

234.

DELTA K A: 37.88  
MAX B:  
C:  
D:

318.

ROOT MEAN SQUARE  
PERCENT ERROR

21.03

LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25  
SUMMARY 1.25-2.0  
(NP/NA) >2.0

CONDITION/HT: T3  
 FORM: 0.13" TH SHEET  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T  
 STRESS RATIO: +0.05  
 FREQUENCY: 2.00 HZ

YIELD STRENGTH: 49.0 KSI  
 ULT. STRENGTH: 66.0 KSI  
 SPECIMEN THK: 0.128"  
 SPECIMEN WIDTH: 12.000"  
 REFERENCES: 86212

ALUM.  
 ALLOY

2024

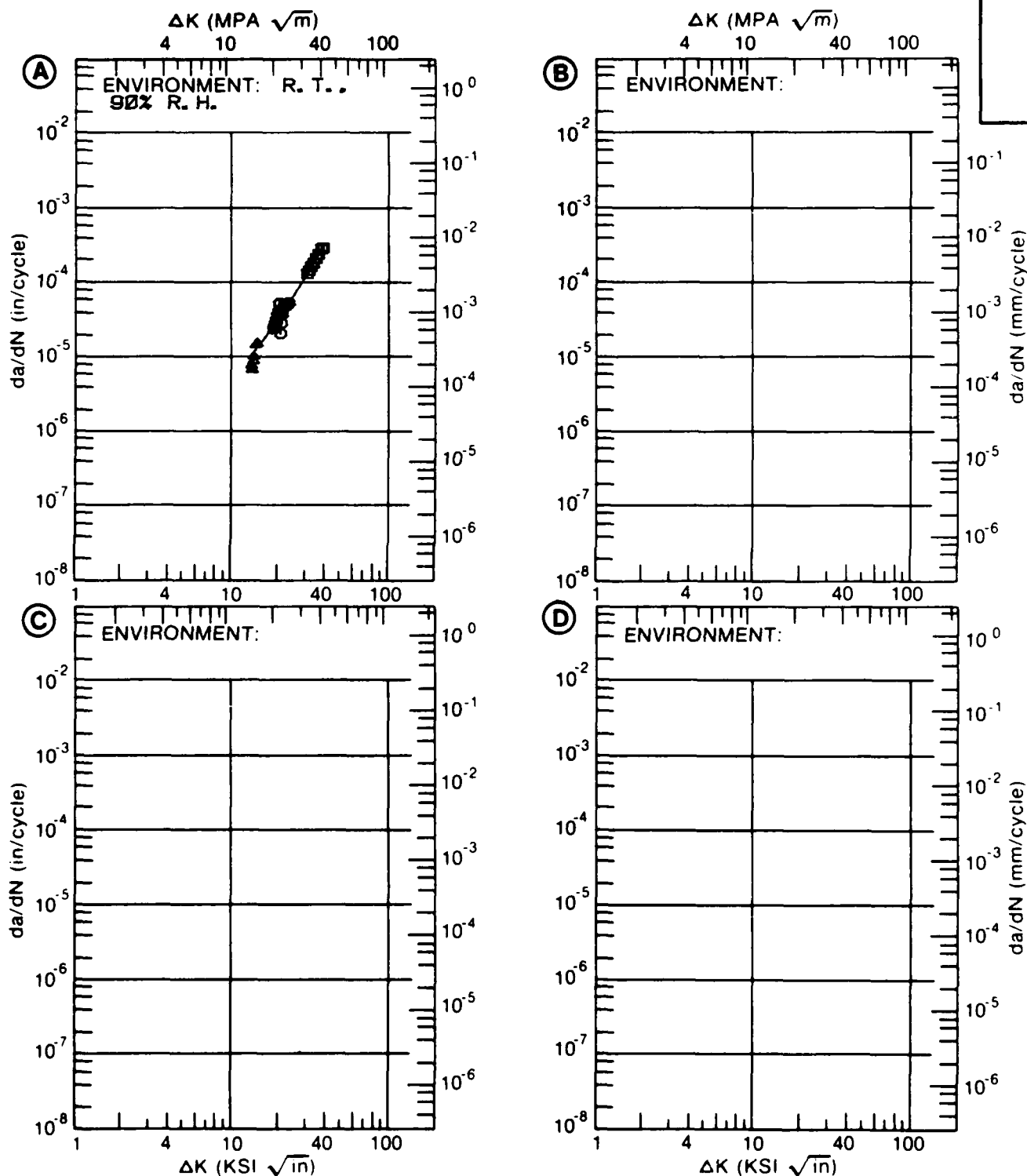


Figure 7.5.3.6

TABLE 7.5.3.7

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.5.3.7 INDICATING EFFECT  
OF STRESS RATIO

MATERIAL: ALUMINUM		2024			
CONDITION: T3					
ENVIRONMENT: R.T. , LAB AIR					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		R=-1.00	R=-0.50	R=+0.05	
DELTA K MIN	A:	5.03	.119		
	B:	4.59	.129		
	C:	5.78		.238	
	D:				
	5.00		.144		
	6.00	.495	.755	.351	
	7.00	1.43	2.66	1.34	
	8.00	3.15	5.78	3.25	
	9.00	5.77	9.49	5.99	
	10.00	9.29	13.2	9.36	
	13.00	24.0	23.1	22.7	
	16.00	41.4	35.2	45.3	
	20.00	70.3	67.2		
DELTA K MAX	A:	24.85	264.		
	B:	24.91	175.		
	C:	19.55		102.	
	D:				
ROOT MEAN SQUARE		24.20	19.99	12.63	
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25				
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				



CONDITION/HT: T3  
 FORM: 0.25" TH PLATE  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T  
 FREQUENCY: 20.00 HZ  
 ENVIRONMENT: R.T., LAB AIR

YIELD STRENGTH: 50.9 KSI  
 ULT. STRENGTH: 68.5 KSI  
 SPECIMEN THK: 0.250"  
 SPECIMEN WIDTH: 3.000"  
 REFERENCES: UD006

ALUM.  
 ALLOY

2024

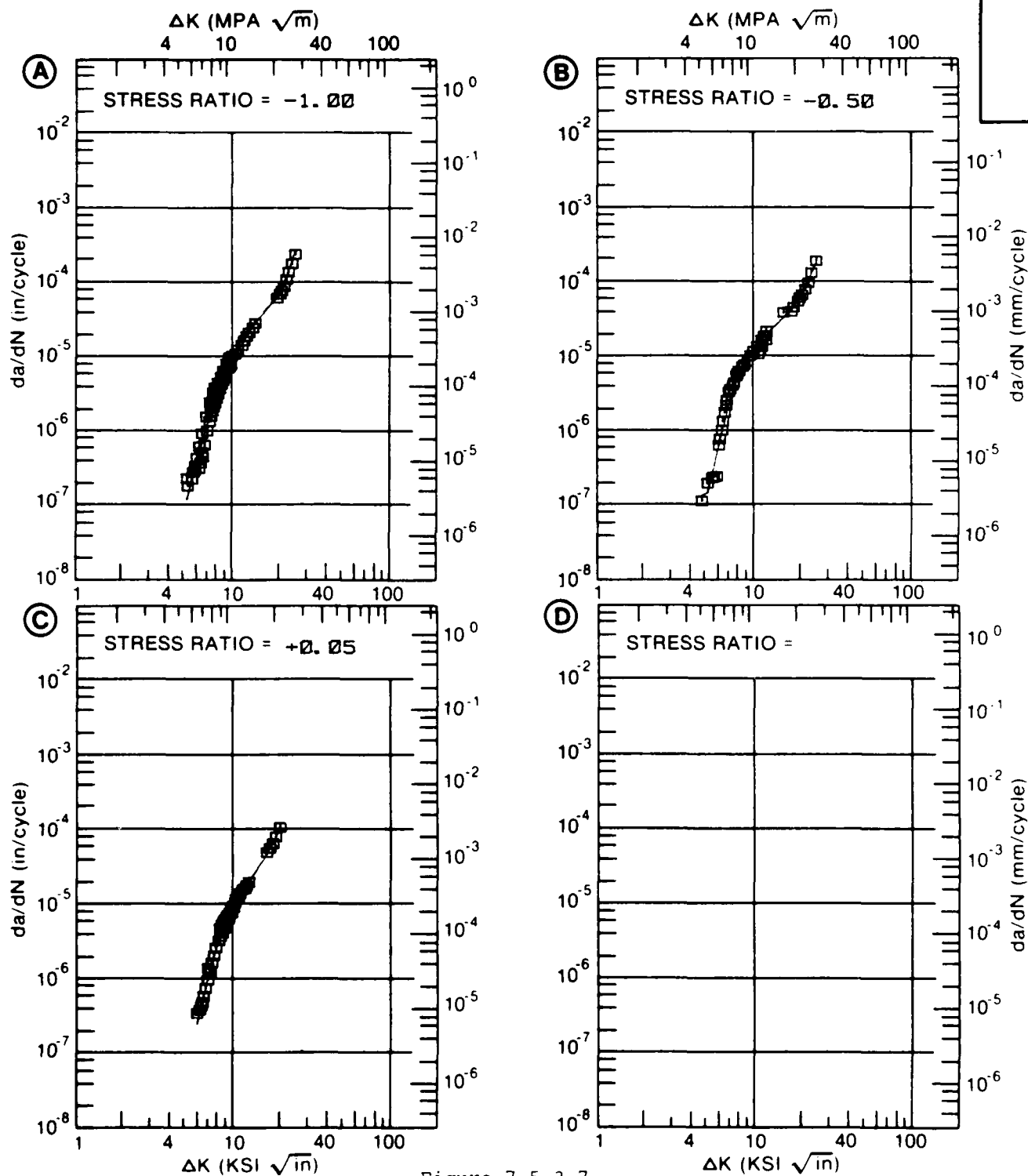


Figure 7.5.3.7

TABLE 7.5.3.8

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.5.3.8 INDICATING EFFECT

OF STRESS RATIO

MATERIAL: ALUMINUM 2024  
CONDITION: T351  
ENVIRONMENT: - 65F, AIR

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		R=+0.00	R=+0.80		
A:	9.84	.354			
DELTA K B:	6.02		.766		
MIN C:					
D:					
	7.00		1.96		
	8.00		4.70		
	9.00		10.2		
	10.00	.360	20.4		
	13.00	1.06	102.		
	16.00	4.50	303.		
	20.00	19.7			
	25.00	69.4			
A:	29.42	208.			
DELTA K B:	17.13		414.		
MAX C:					
D:					

ROOT MEAN SQUARE 26.82 10.41  
PERCENT ERROR

LIFE 0.0-0.5  
PREDICTION 0.5-0.8 1  
RATIO 0.8-1.25 1  
SUMMARY 1.25-2.0  
(NP/NA) >2.0

CONDITION/HT: T351  
 FORM: SHEET  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T  
 FREQUENCY:  
 ENVIRONMENT: - 65° F. AIR

YIELD STRENGTH: 56.9 KSI  
 ULT. STRENGTH:  
 SPECIMEN THK: 0.184- 0.188"  
 SPECIMEN WIDTH: 11.997- 12.000"  
 REFERENCES: DA001

ALUM.  
 ALLOY

2024

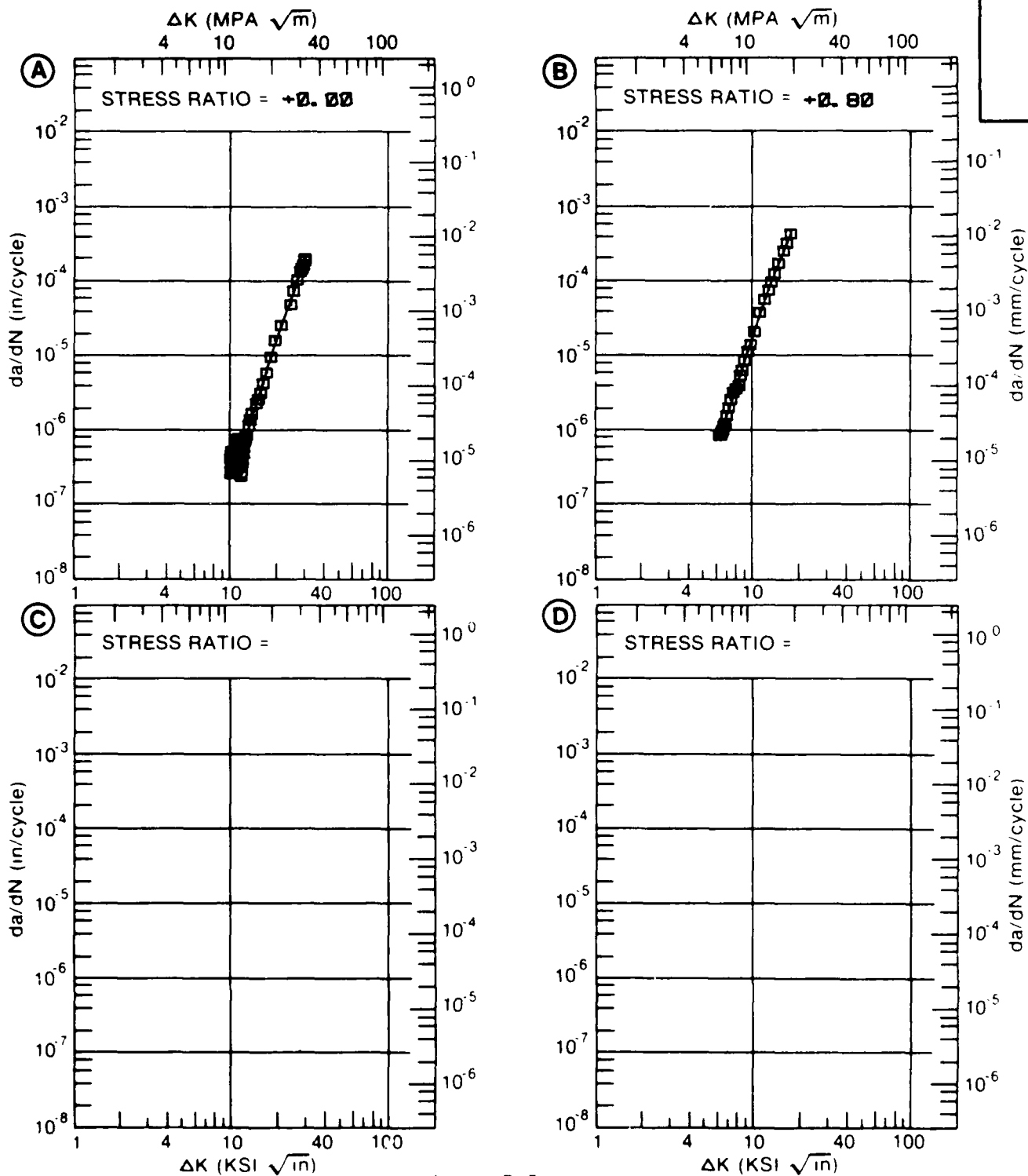


Figure 7.5.

TABLE 7.5.3.9

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.5.3.9 INDICATING EFFECT

## OF STRESS RATIO

MATERIAL: ALUMINUM 2024  
CONDITION: T351  
ENVIRONMENT: R. T. , LAB AIR

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		R=+0.00	R=+0.40	R=+0.80	
DELTA K	A: 9.51	5.14			
MIN	B: 15.81		60.3		
	C: 7.98			13.8	
	D:				
	8.00			14.0	
	9.00			23.4	
	10.00	6.16		39.2	
	13.00	13.6		167.	
	16.00	23.5	63.5	553.	
	20.00	44.0	163.		
	25.00		419.		
	30.00		935.		
DELTA K	A: 24.94	95.5			
MAX	B: 33.80		1628.		
	C: 17.04			790.	
	D:				
ROOT MEAN SQUARE		3.46	5.76	15.15	
PERCENT ERROR					

LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25  
SUMMARY 1.25-2.0  
(NP/NA) >2.0

1

1

1

CONDITION/HT: T351

FORM: SHEET

SPECIMEN TYPE: CCP

ORIENTATION: L-T

FREQUENCY: 3.00- 6.00 HZ

ENVIRONMENT: R. T., LAB AIR

YIELD STRENGTH: 56.9 KSI

ULT. STRENGTH:

SPECIMEN THK: 0.181- 0.186"

SPECIMEN WIDTH: 11.998- 12.009"

REFERENCES: DA001

ALUM.  
ALLOY

2024

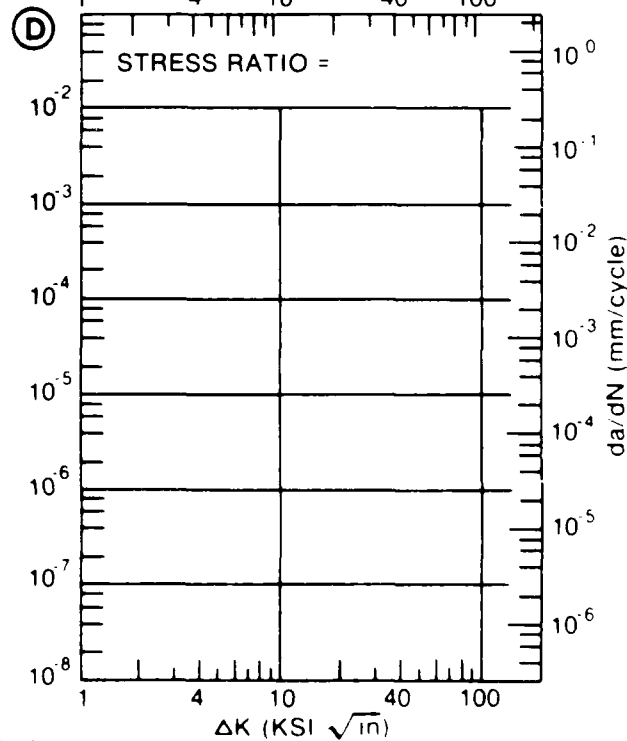
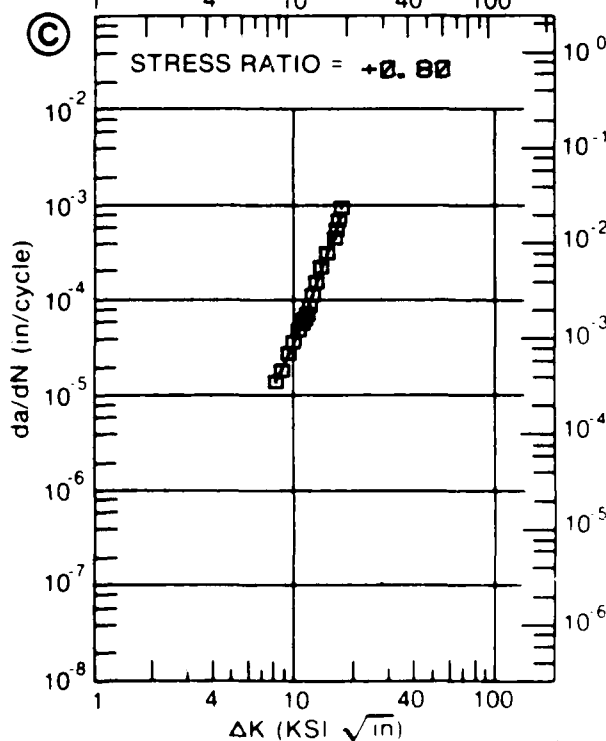
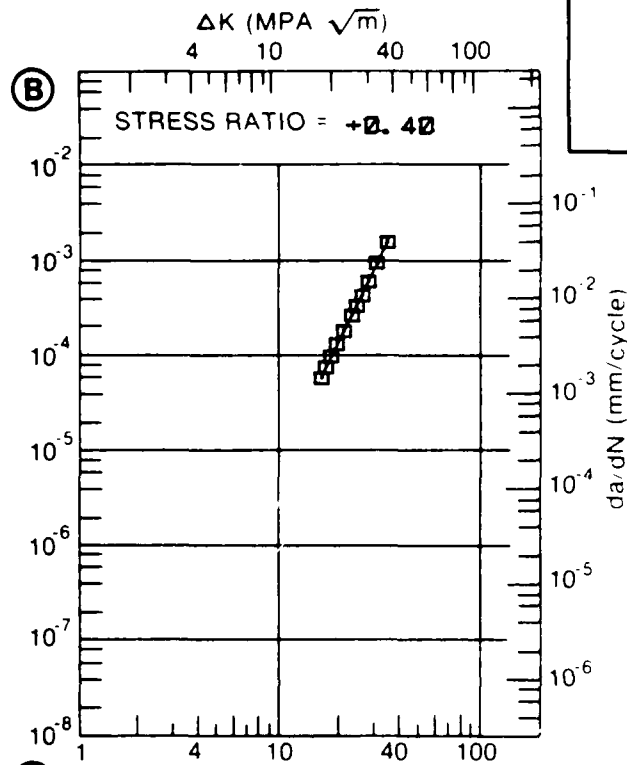
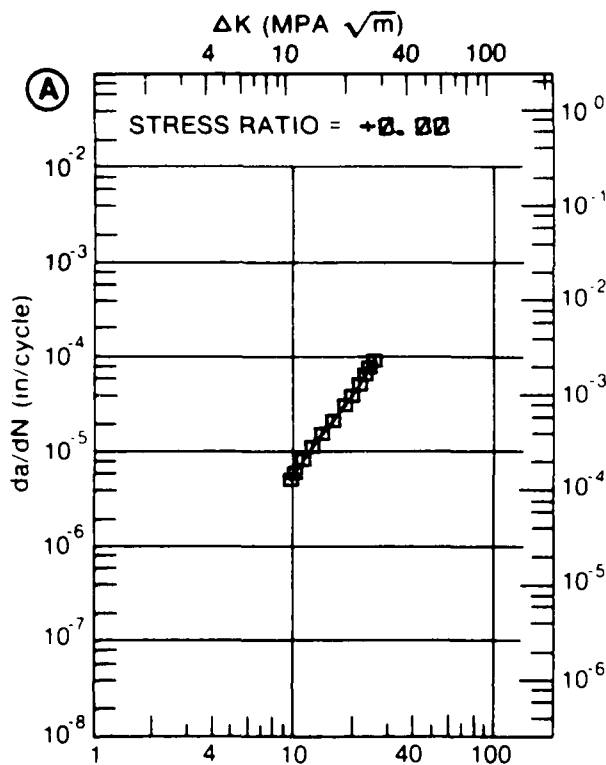


Figure 7.5.3.9

TABLE 7.5.3.10

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.5.3.10 INDICATING EFFECT

OF STRESS RATIO

MATERIAL: ALUMINUM 2024  
CONDITION: T351  
ENVIRONMENT: R. T. , H. H. A.

DELTA K  
(KSI\*IN\*\*1/2)

DA/DN (10\*\*-6 IN. /CYCLE)

A

B

C

D

R=+0.00

R=+0.70

DELTA K A: 7.32 :  
MIN B: 4.72 :  
C: :  
D: :

1.35

.464

5.00 :

.636

6.00 :

1.50

7.00 :

2.72

8.00 :

1.80

4.25

9.00 :

2.75

6.13

10.00 :

4.09

8.42

13.00 :

9.26

19.4

DELTA K A: 15.05 :  
MAX B: 14.38 :  
C: :  
D: :

11.4

28.1

ROOT MEAN SQUARE  
PERCENT ERROR

18.10

14.22

LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25  
SUMMARY 1.25-2.0  
(NP/NA) >2.0

CONDITION/HT: T351  
 FORM: SHEET  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T  
 FREQUENCY: 9.00 HZ  
 ENVIRONMENT: R. T., H. H. A.

YIELD STRENGTH:  
 ULT. STRENGTH:  
 SPECIMEN THK: 0.163"  
 SPECIMEN WIDTH: 5.000"  
 REFERENCES: B7002

ALUM.  
 ALLOY

2024

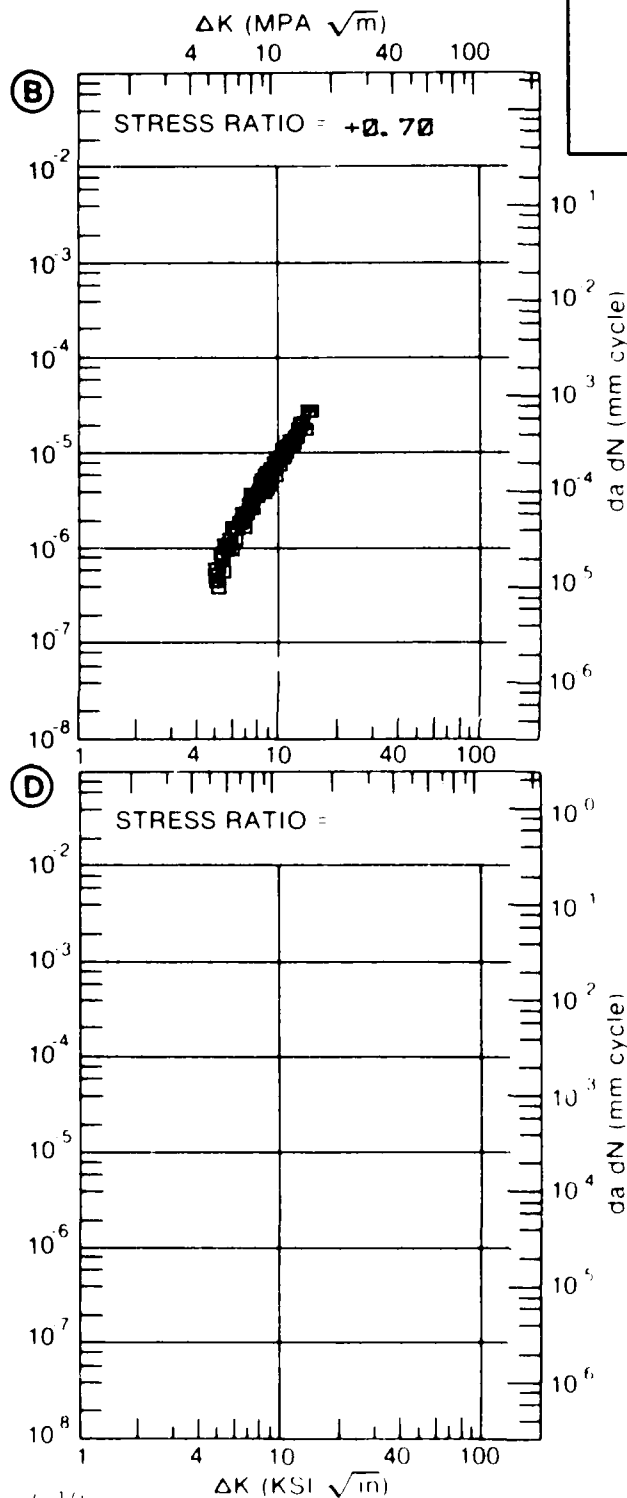
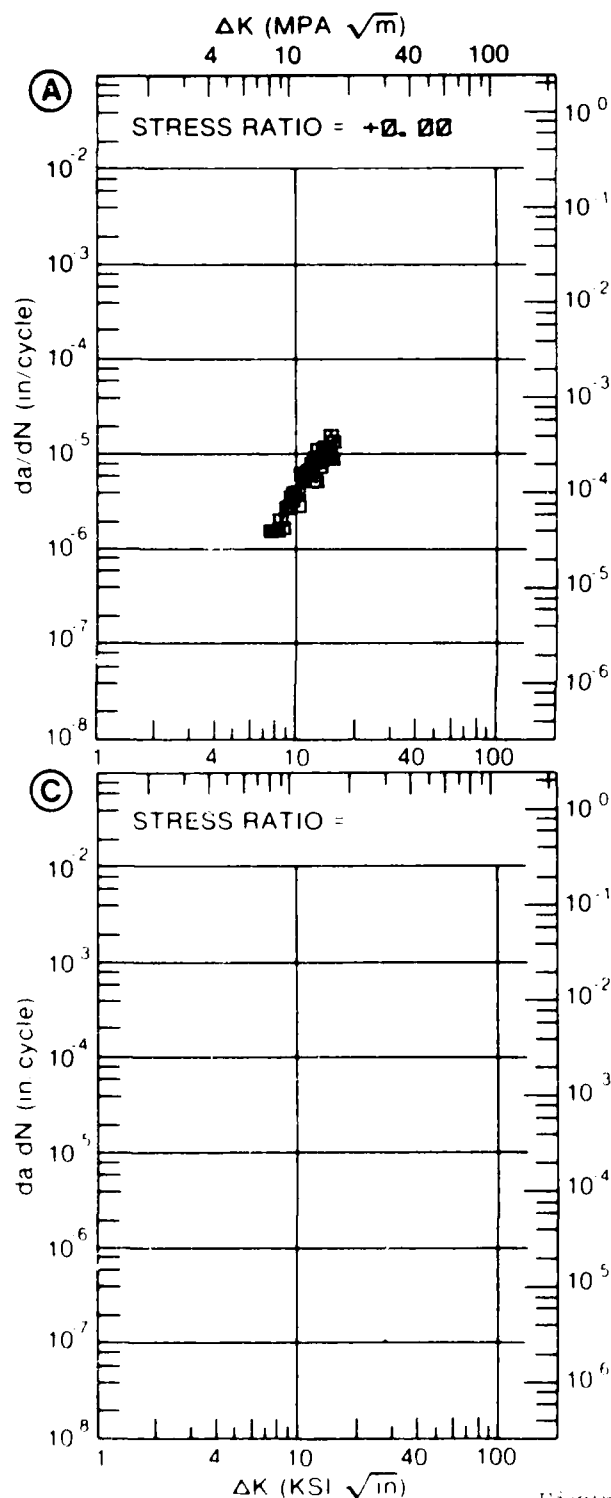


Figure 7.5.3.10

TABLE 7.5.3.11

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.5.3.11 INDICATING EFFECT

OF STRESS RATIO

MATERIAL: ALUMINUM 2024  
CONDITION: T351  
ENVIRONMENT: R. T. , S. T. W.

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		R=+0.00	R=+0.33		
DELTA K MIN	A: 8.77	2.31			
	B: 11.68		19.2		
	C:				
	D:				
	9.00	2.46			
	10.00	3.21			
	13.00		25.1		
	16.00		49.6		
	20.00		113.		
DELTA K MAX	A: 11.81	7.19			
	B: 24.00		211.		
	C:				
	D:				
ROOT MEAN SQUARE		9.30	6.30		
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25	1	1		
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				



CONDITION/HT: T351  
 FORM: SHEET  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T  
 FREQUENCY: 1.00- 10.00 HZ  
 ENVIRONMENT: R. T., S. T. W.

YIELD STRENGTH: 56.9 KSI  
 ULT. STRENGTH:  
 SPECIMEN THK: 0.182- 0.192"  
 SPECIMEN WIDTH: 12.000"  
 REFERENCES: DA001

ALUM.  
ALLOY

2024

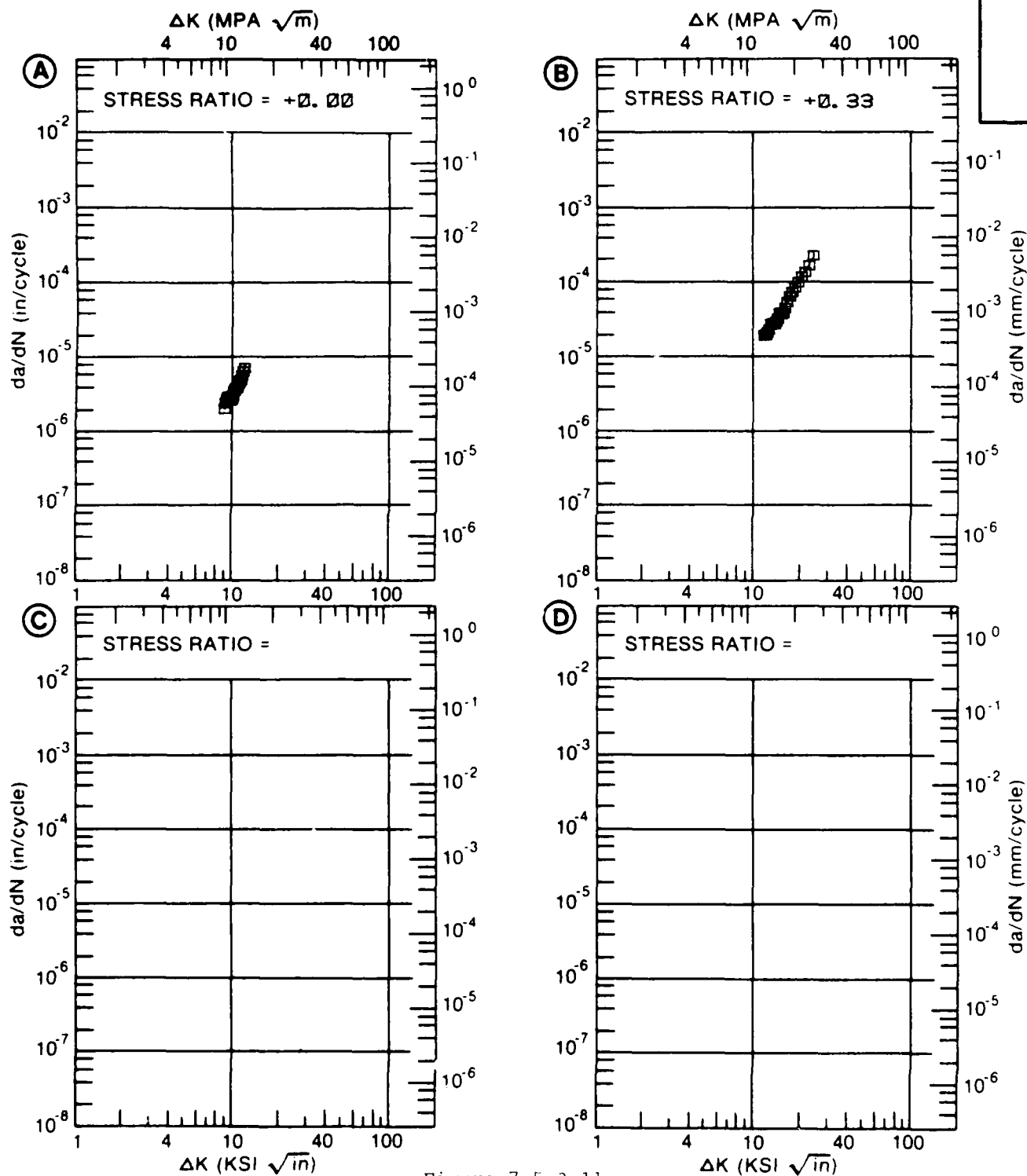


Figure 7.5.3.11

TABLE 7.5.3.12

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.5.3.12 INDICATING EFFECT

OF STRESS RATIO

MATERIAL: ALUMINUM		2024	
CONDITION: T351			
ENVIRONMENT: R.T ,LAB AIR			
-----			
DELTA K		DA/DN (10***-6 IN. /CYCLE)	
(KSI*IN**1/2)			
		A	B
			C
			D
		R=-1.00	R=-0.50
A:	3.50 :	.159	
DELTA K B:	2.80 :		.0919
MIN C:	:		
D:	:		
	:		
	3.00 :		.0936
	3.50 :	.159	.107
	4.00 :	.161	.133
	5.00 :	.270	.254
	6.00 :	.620	.575
	7.00 :	1.60	1.40
	8.00 :	3.91	3.04
	9.00 :	7.26	5.43
	10.00 :	9.44	7.87
	13.00 :	12.4	13.7
	16.00 :	27.3	21.0
	20.00 :	41.3	47.3
	25.00 :		115.
A:	20.00 :	41.3	
DELTA K B:	27.15 :		140.
MAX C:	:		
D:	:		
	:		
-----			
ROOT MEAN SQUARE		10.20	15.32
PERCENT ERROR			
-----			
LIFE	0.0-0.5		
PREDICTION	0.5-0.8		
RATIO	0.8-1.25	1	1
SUMMARY	1.25-2.0		
(NP/NA)	>2.0		

CONDITION/HT: 351  
 FORM: PLATE  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T  
 FREQUENCY: 3.00- 5.00 HZ  
 ENVIRONMENT: R. T., LAB AIR

YIELD STRENGTH: 54.5 KSI  
 ULT. STRENGTH:  
 SPECIMEN THK: 0.242"  
 SPECIMEN WIDTH: 9.000"  
 REFERENCES: DA001

ALUM.  
ALLOY

2024

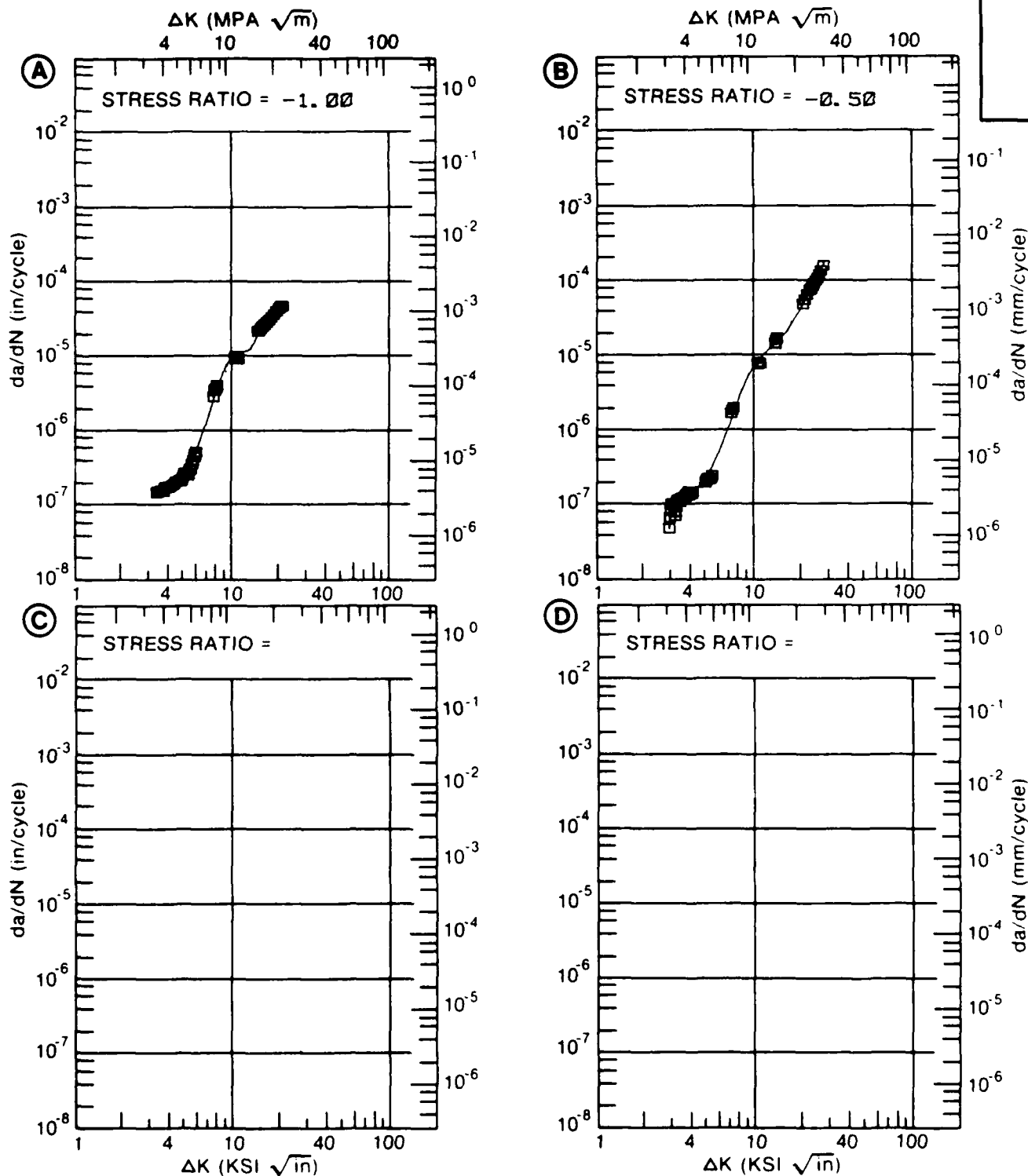


Figure 7.5.3.12

TABLE 7.5.3.13

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.5.3.13 INDICATING EFFECT  
OF STRESS RATIO

MATERIAL: ALUMINUM		2024			
CONDITION: T351					
ENVIRONMENT: R. T. , LAB AIR					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		R=+0. 01	R=+0. 40	R=+0. 60	R=+0. 80
DELTA K MIN	A: 5. 00	. 205			
	B: 3. 27		. 182		
	C: 5. 50			. 161	
	D: 3. 34				. 316
	3. 50		. 177	. 161	. 327
	4. 00		. 235	. 250	. 520
	5. 00	. 205	. 704	. 878	1. 71
	6. 00	. 521	2. 00	2. 15	3. 89
	7. 00	1. 57	3. 99	4. 08	7. 00
	8. 00	3. 19	6. 24	6. 60	11. 4
	9. 00	5. 11	8. 73	9. 77	18. 8
	10. 00	7. 09	11. 7	13. 8	33. 2
	13. 00	13. 0	24. 0	33. 9	175.
	16. 00	20. 9	44. 8	78. 0	
	20. 00	39. 8			
	25. 00	91. 2			
	30. 00	205.			
	35. 00	389.			
DELTA K MAX	A: 39. 11	546.			
	B: 17. 04		55. 1		
	C: 18. 46			153.	
	D: 14. 85				309.
ROOT MEAN SQUARE		14. 88	7. 66	6. 94	8. 45
PERCENT ERROR					
LIFE	0. 0-0. 5				
PREDICTION	0. 5-0. 8				
RATIO	0. 8-1. 25	1	1	1	1
SUMMARY	1. 25-2. 0				
(NP/NA)	>2. 0				

CONDITION/HT: T351

FORM: PLATE

SPECIMEN TYPE: CCP

ORIENTATION: L-T

FREQUENCY: 1.00- 10.00 HZ

ENVIRONMENT: R. T., LAB AIR

YIELD STRENGTH: 54.5 KSI

ULT. STRENGTH:

SPECIMEN THK: 0.241- 0.242"

SPECIMEN WIDTH: 8.995- 9.000"

REFERENCES: DA001

ALUM.  
ALLOY

2024

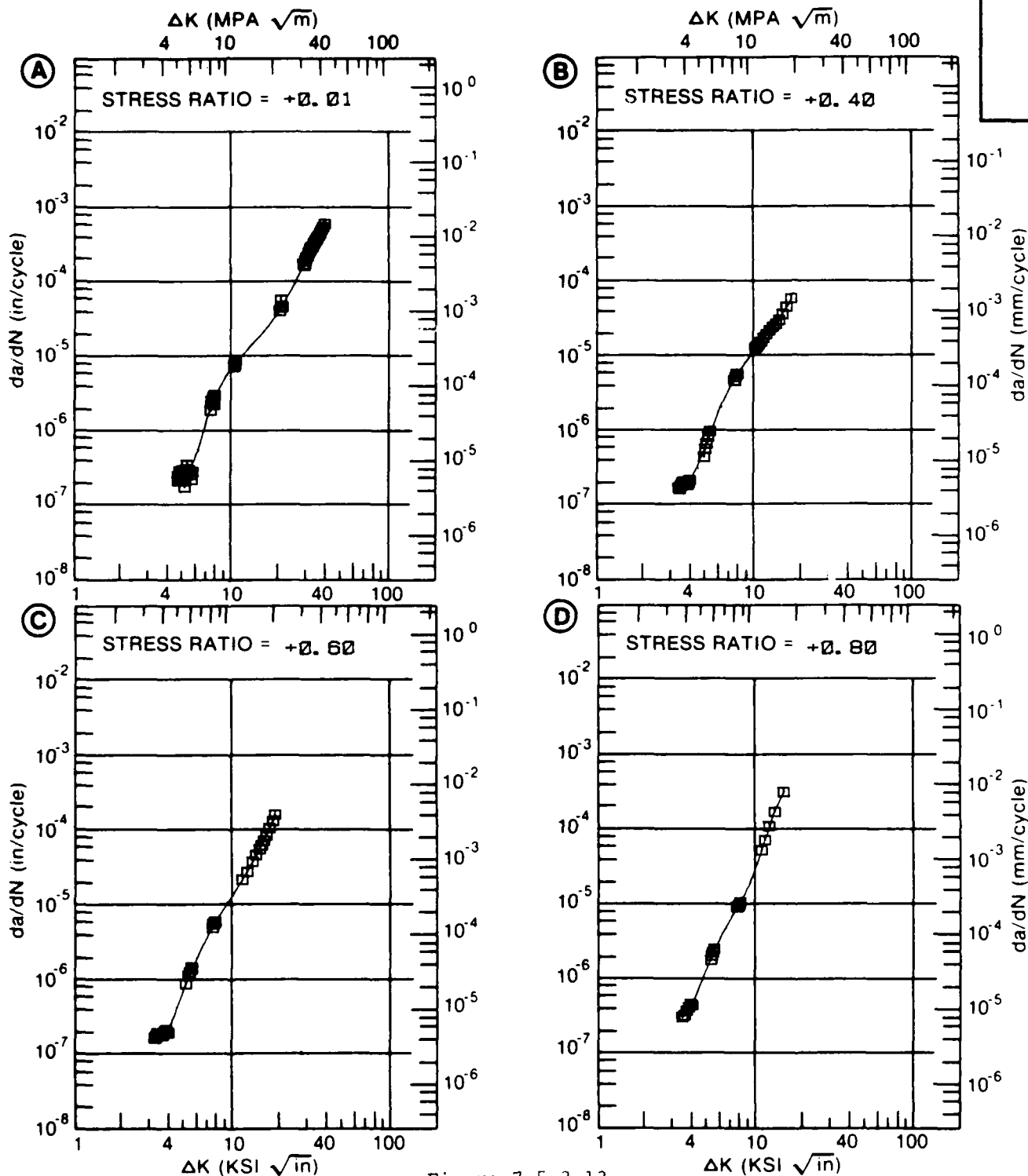


Figure 7.5.3.13

TABLE 7.5.3.14

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.5.3.14 INDICATING EFFECT

OF STRESS RATIO

MATERIAL: ALUMINUM 2024  
CONDITION: T351  
ENVIRONMENT: - 65F, AIR

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		R=+0.00			
DELTA K MIN	A:	27.49	176.		
	B:				
	C:				
	D:				
		30.00	261.		
		35.00	503.		
		40.00	866.		
		50.00	2098.		
		60.00	4367.		
	A:	60.32	4463.		
DELTA K	B:				
MAX	C:				
	D:				

ROOT MEAN SQUARE 7.04  
PERCENT ERROR

LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25 1  
SUMMARY 1.25-2.0  
(NP/NA) >2.0

CONDITION/HT: T351  
 FORM: 0.25" TH PLATE  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T  
 FREQUENCY: 1.00- 2.00 HZ  
 ENVIRONMENT: - 65° F, AIR

YIELD STRENGTH: 56.9 KSI  
 ULT. STRENGTH:  
 SPECIMEN THK: 0.259"  
 SPECIMEN WIDTH: 12.002"  
 REFERENCES: DA001

ALUM.  
 ALLOY

2024

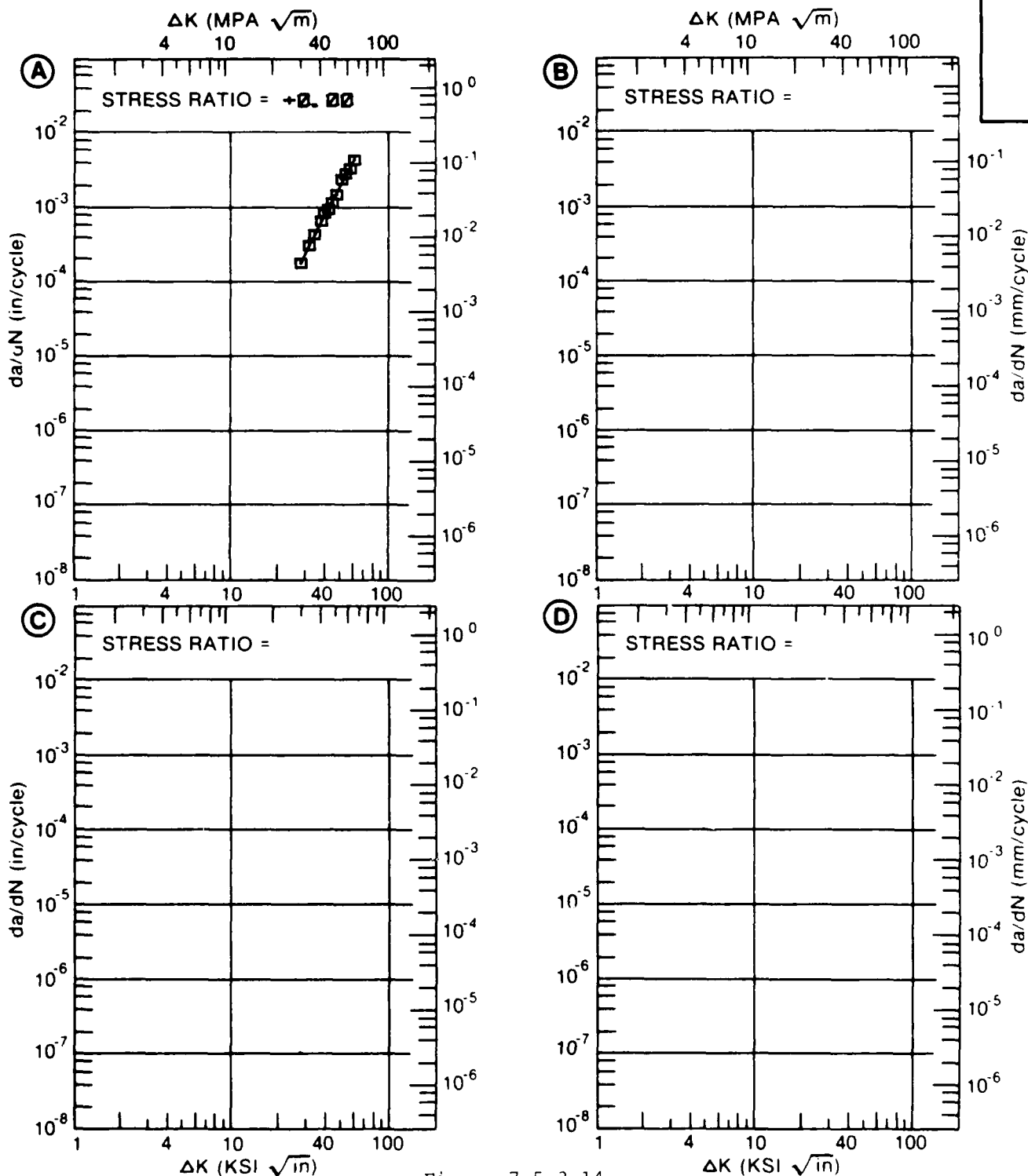


Figure 7.5.3.14

TABLE 7.5.3.15

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.5.3.15 INDICATING EFFECT  
OF STRESS RATIO

MATERIAL: ALUMINUM		2024			
CONDITION: T351					
ENVIRONMENT: R. T. , LAB AIR					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		R=+0. 00	R=+0. 40	R=+0. 80	
DELTA K MIN	A:	4. 49	. 109		
	B:	3. 67	. 219		
	C:	4. 71		1. 06	
	D:				
	4. 00		. 227		
	5. 00	. 156	. 478	1. 41	
	6. 00	. 244	1. 30	3. 08	
	7. 00	. 792	3. 07	5. 46	
	8. 00		5. 65		
	9. 00		7. 80		
DELTA K MAX	A:	7. 41	1. 79		
	B:	9. 80	8. 28		
	C:	7. 53		7. 04	
	D:				
ROOT MEAN SQUARE		15. 52	12. 18	2. 83	
PERCENT ERROR					
LIFE	0. 0-0. 5				
PREDICTION	0. 5-0. 8				
RATIO	0. 8-1. 25	1	1	1	
SUMMARY	1. 25-2. 0				
(NP/NA)	>2. 0				



CONDITION/HT: T351  
 FORM: 0.25" TH PLATE  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T  
 FREQUENCY: 5.00- 20.00 HZ  
 ENVIRONMENT: R. T., LAB AIR

YIELD STRENGTH: 56.9 KSI  
 ULT. STRENGTH:  
 SPECIMEN THK: 0.188- 0.192"  
 SPECIMEN WIDTH: 3.999- 4.003"  
 REFERENCES: DA001

ALUM.  
 ALLOY

2024

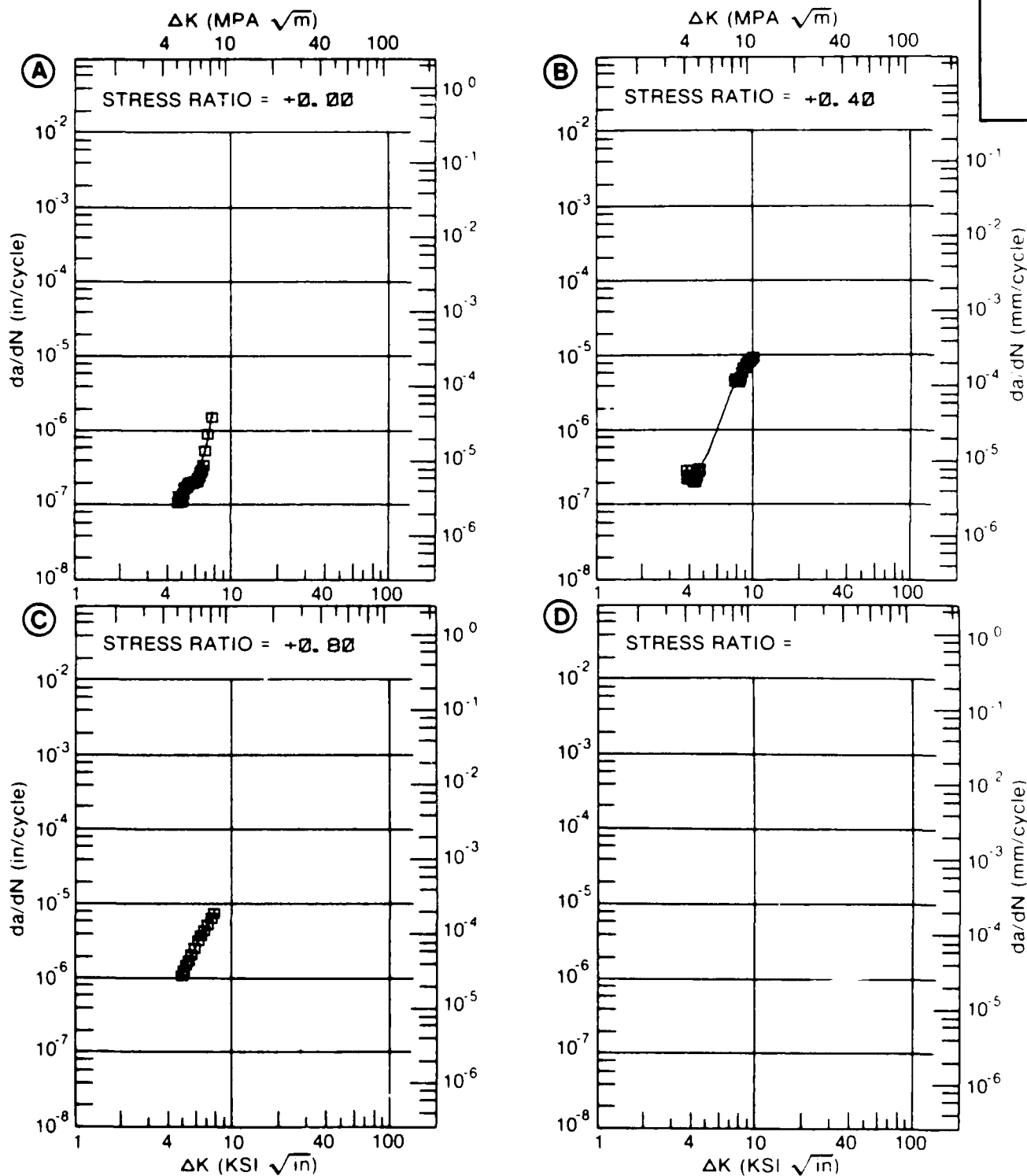


Figure 7.5.3.15

TABLE 7.5.3.16

**FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR**

DATA ASSOCIATED WITH FIGURE 7.5.3.16 INDICATING EFFECT

**OF STRESS RATIO**

MATERIAL: ALUMINUM 2024  
CONDITION: T351  
ENVIRONMENT: R. T. , LAB AIR

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		R=-1.00	R=+0.00	R=+0.40	R=+0.80
DELTA K MIN	A: 11.83	12.2			
	B: 23.72		119.		
	C: 10.67			17.9	
	D: 5.32				2.68
	6.00				4.16
	7.00				8.61
	8.00				17.7
	9.00				34.2
	10.00				60.9
	13.00	17.5		28.0	204.
DELTA K MAX	16.00	36.2		70.2	
	20.00	74.6		232.	
	25.00	159.	148.		
	30.00	325.	306.		
	35.00	658.	552.		
	40.00		924.		
	50.00		2324.		
	A: 38.29	1051.			
	B: 52.44		2877.		
	C: 22.69			444.	
	D: 14.31				275.
ROOT MEAN SQUARE		17.03	3.77	7.82	9.27
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25	2	1	1	1
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION/HT: T351  
 FORM: 0.25" TH PLATE  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T  
 FREQUENCY: 1.00- 16.00 HZ  
 ENVIRONMENT: R. T., LAB AIR

YIELD STRENGTH: 56.9 KSI  
 ULT. STRENGTH:  
 SPECIMEN THK: 0.189- 0.261"  
 SPECIMEN WIDTH: 11.997- 12.007"  
 REFERENCES: DA001

ALUM.  
ALLOY

2024

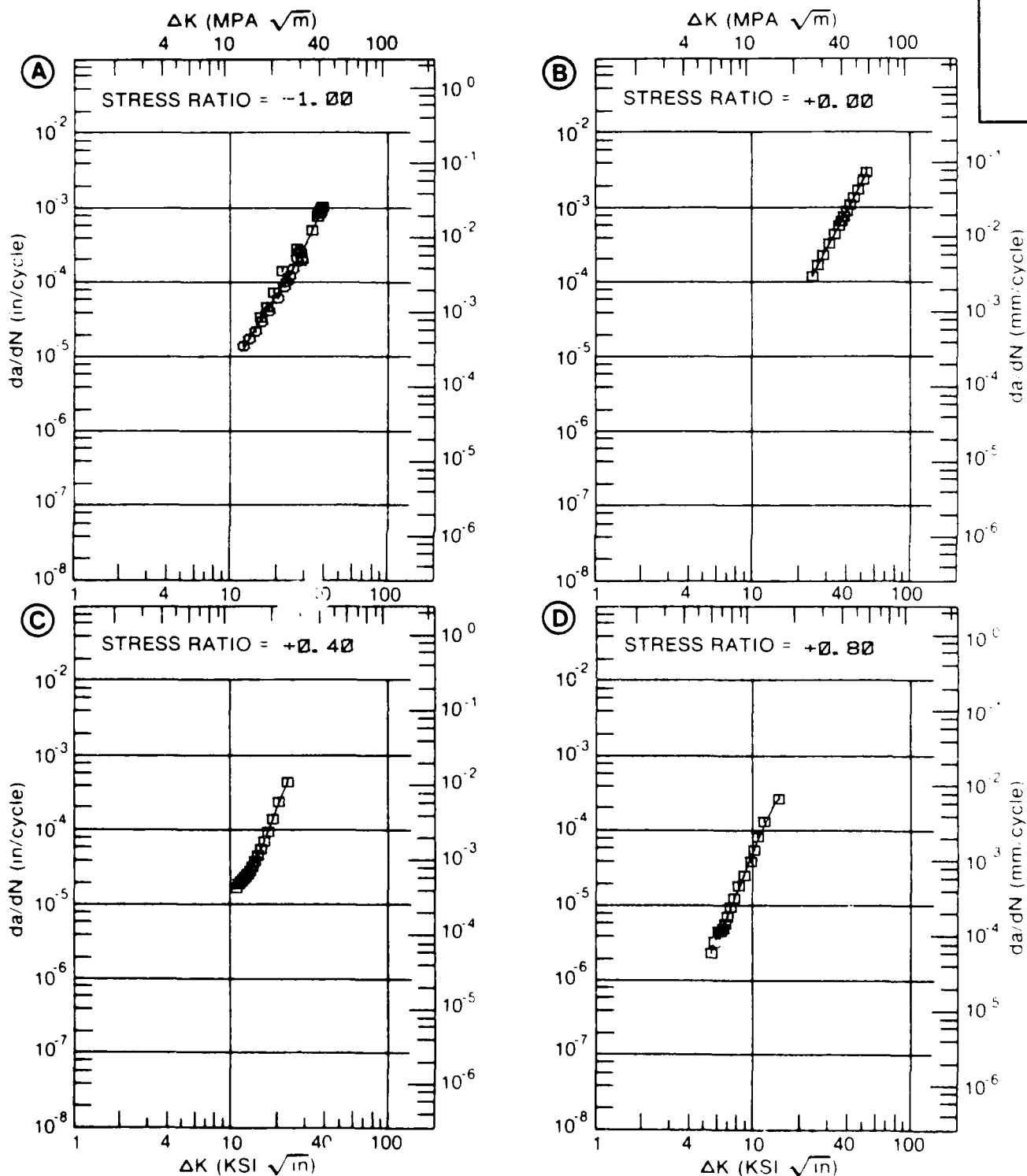


Figure 7.5.3.16

TABLE 7.5.3.17

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTORDATA ASSOCIATED WITH FIGURE 7.5.3.17 INDICATING EFFECT  
OF STRESS RATIO

---

MATERIAL: ALUMINUM 2024  
CONDITION: T351  
ENVIRONMENT: R.T., LAB AIR

---

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		R=+0.10			
DELTA K MIN	A:	12.37	14.6		
	B:				
	C:				
	D:				
		13.00	17.5		
		16.00	29.5		
		20.00	55.0		
DELTA K MAX	A:	24.93	209.		
	B:				
	C:				
	D:				

---

ROOT MEAN SQUARE 13.67  
PERCENT ERROR

---



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LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25  
SUMMARY 1.25-2.0  
(NP/NA) >2.0

---

CONDITION/HT: T351  
 FORM: 0.25" TH PLATE  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T  
 FREQUENCY: 3.00 HZ  
 ENVIRONMENT: R. T., LAB AIR

YIELD STRENGTH:  
 ULT. STRENGTH:  
 SPECIMEN THK: 0.250"  
 SPECIMEN WIDTH: 5.000"  
 REFERENCES: FR001

ALUM.  
 ALLOY

2024

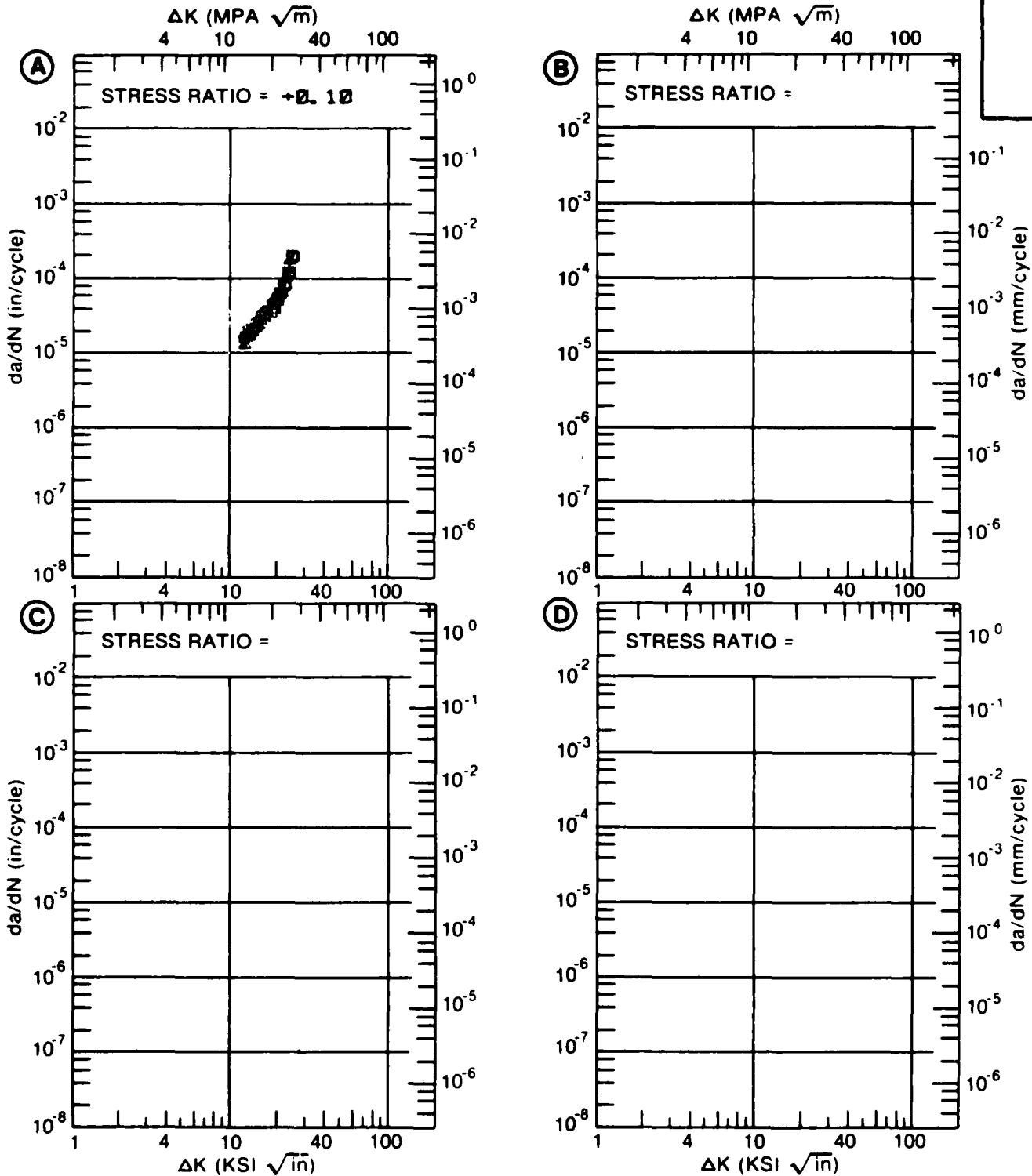


Figure 7.5.3.17

TABLE 7.5.3.18

**FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR**

**DATA ASSOCIATED WITH FIGURE 7.5.3.18 INDICATING EFFECT**

**OF ENVIRONMENT**

MATERIAL: ALUMINUM		2024			
CONDITION: T351					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R. T.	E=+ 200F	E=+ 300F	E=+ 400F
		LAB AIR	AIR	AIR	AIR
DELTA K MIN	A:	8.19	2.84		
	B:	7.67	3.23		
	C:	6.72		2.15	
	D:	6.52			2.02
		7.00		2.38	2.44
		8.00	3.58	3.50	3.54
		9.00	4.06	5.14	4.99
		10.00	5.98	7.43	6.89
		13.00	14.8	19.2	16.4
		16.00	28.3	38.6	35.2
		20.00	52.1		
DELTA K MAX	A:	21.86	64.7		
	B:	16.64	42.7		
	C:	19.19		63.7	
	D:	19.04			70.9
ROOT MEAN SQUARE		12.74	10.27	10.95	17.31
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25				
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION/HT: T351  
 FORM: 0.50" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 STRESS RATIO: +0.01  
 FREQUENCY: 20.00 HZ

YIELD STRENGTH: 51.5 KSI  
 ULT. STRENGTH: 85.9 KSI  
 SPECIMEN THK: 0.500"  
 SPECIMEN WIDTH: 2.000"  
 REFERENCES: U0000

ALUM.  
ALLOY

2024

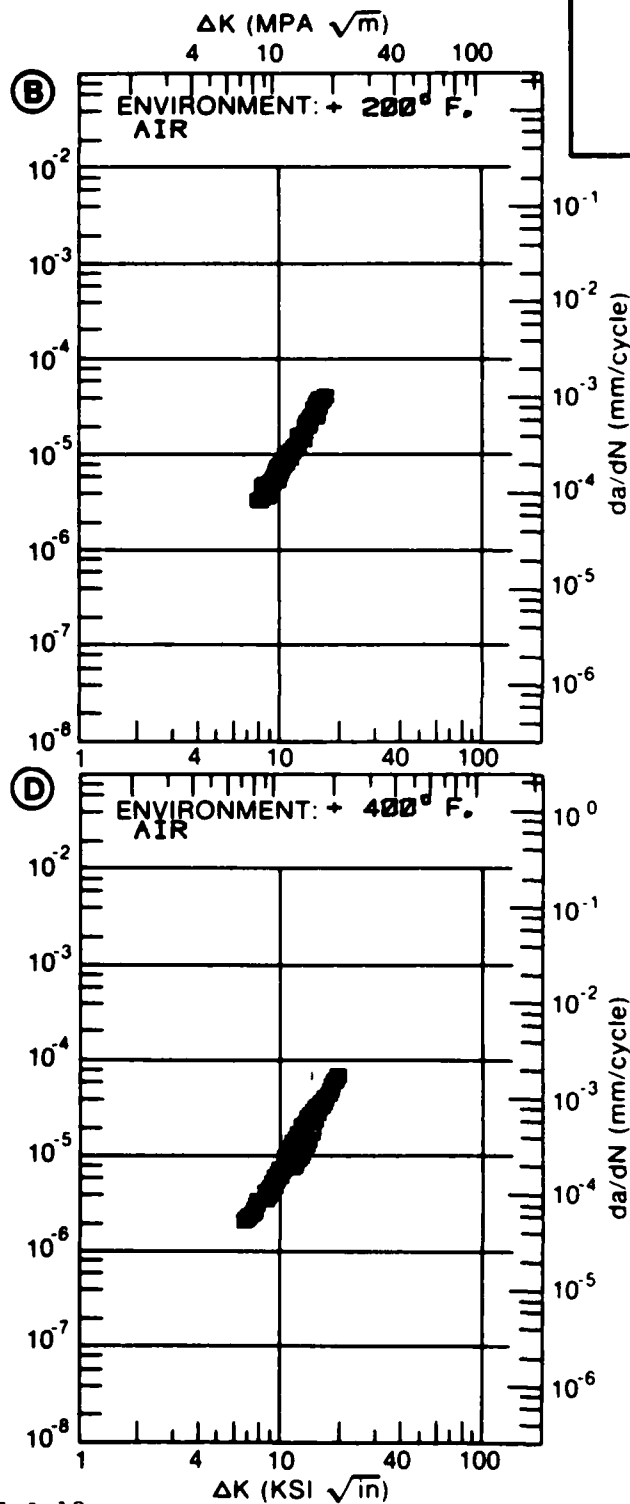
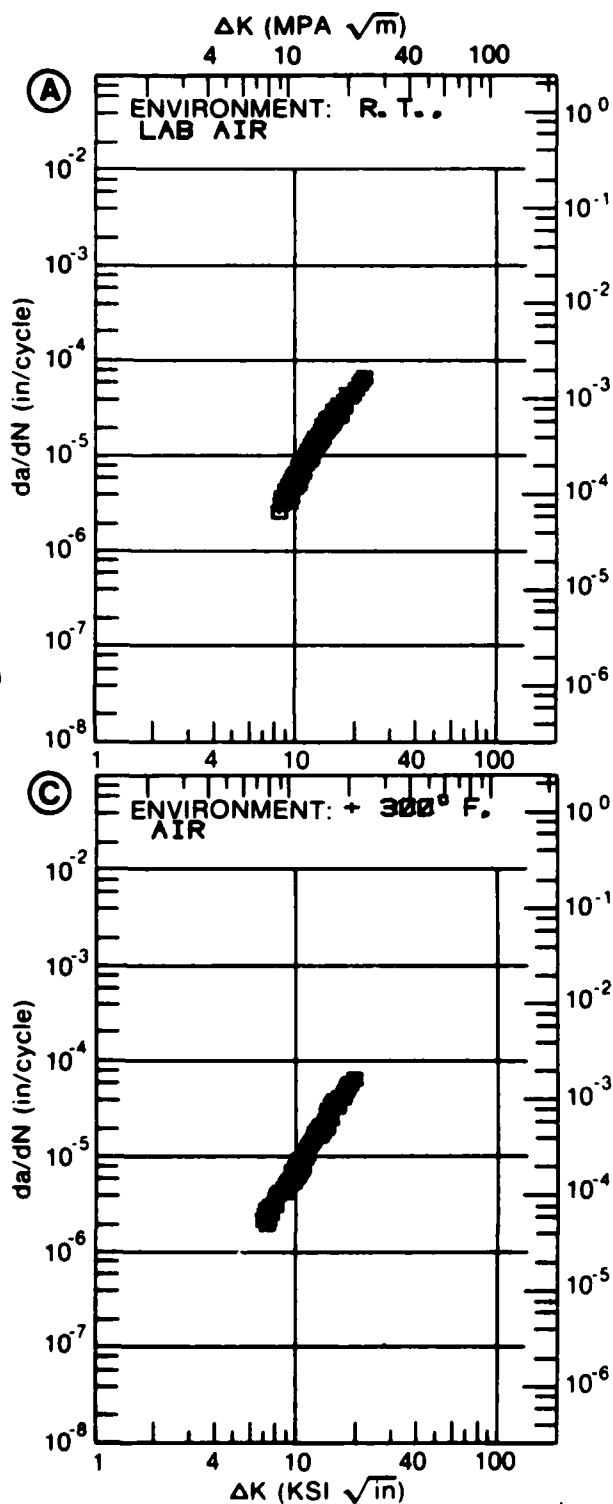


Figure 7.5.3.18

TABLE 7.5.3.19

**FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR**

**DATA ASSOCIATED WITH FIGURE 7.5.3.19 INDICATING EFFECT**

**OF ENVIRONMENT**

<b>MATERIAL: ALUMINUM</b>		<b>2024</b>			
<b>CONDITION: T351</b>					
<b>DELTA K (KSI*IN**1/2)</b>		<b>DA/DN (10**-6 IN. /CYCLE)</b>			
		<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
		<b>E= R. T. LAB AIR</b>	<b>E=+ 200F AIR</b>	<b>E=+ 300F AIR</b>	<b>E=+ 400F AIR</b>
<b>DELTA K MIN</b>	<b>A:</b>	7.96	4.07		
	<b>B:</b>	6.84	2.95		
	<b>C:</b>	6.93		2.44	
	<b>D:</b>	6.68			2.73
		7.00	3.11	2.54	3.11
		8.00	4.14	4.37	4.28
		9.00	6.03	6.18	6.47
		10.00	8.62	8.70	9.35
		13.00	21.4	22.2	10.6
<b>DELTA K MAX</b>	<b>A:</b>	13.55	24.5		
	<b>B:</b>	13.54	25.8		
	<b>C:</b>	11.58		16.5	
	<b>D:</b>	11.82			18.5
<b>ROOT MEAN SQUARE PERCENT ERROR</b>		7.41	21.25	5.04	4.60
<b>LIFE</b>	0.0-0.5				
<b>PREDICTION</b>	0.5-0.8				
<b>RATIO</b>	0.8-1.25				
<b>SUMMARY</b>	1.25-2.0				
<b>(NP/NA)</b>	>2.0				



CONDITION/HT: T351  
 FORM: 0.50" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 STRESS RATIO: +0.10  
 FREQUENCY: 20.00 HZ

YIELD STRENGTH: 51.5 KSI  
 ULT. STRENGTH: 65.9 KSI  
 SPECIMEN THK: 0.500"  
 SPECIMEN WIDTH: 2.000"  
 REFERENCES: UD009

ALUM.  
ALLOY

2024

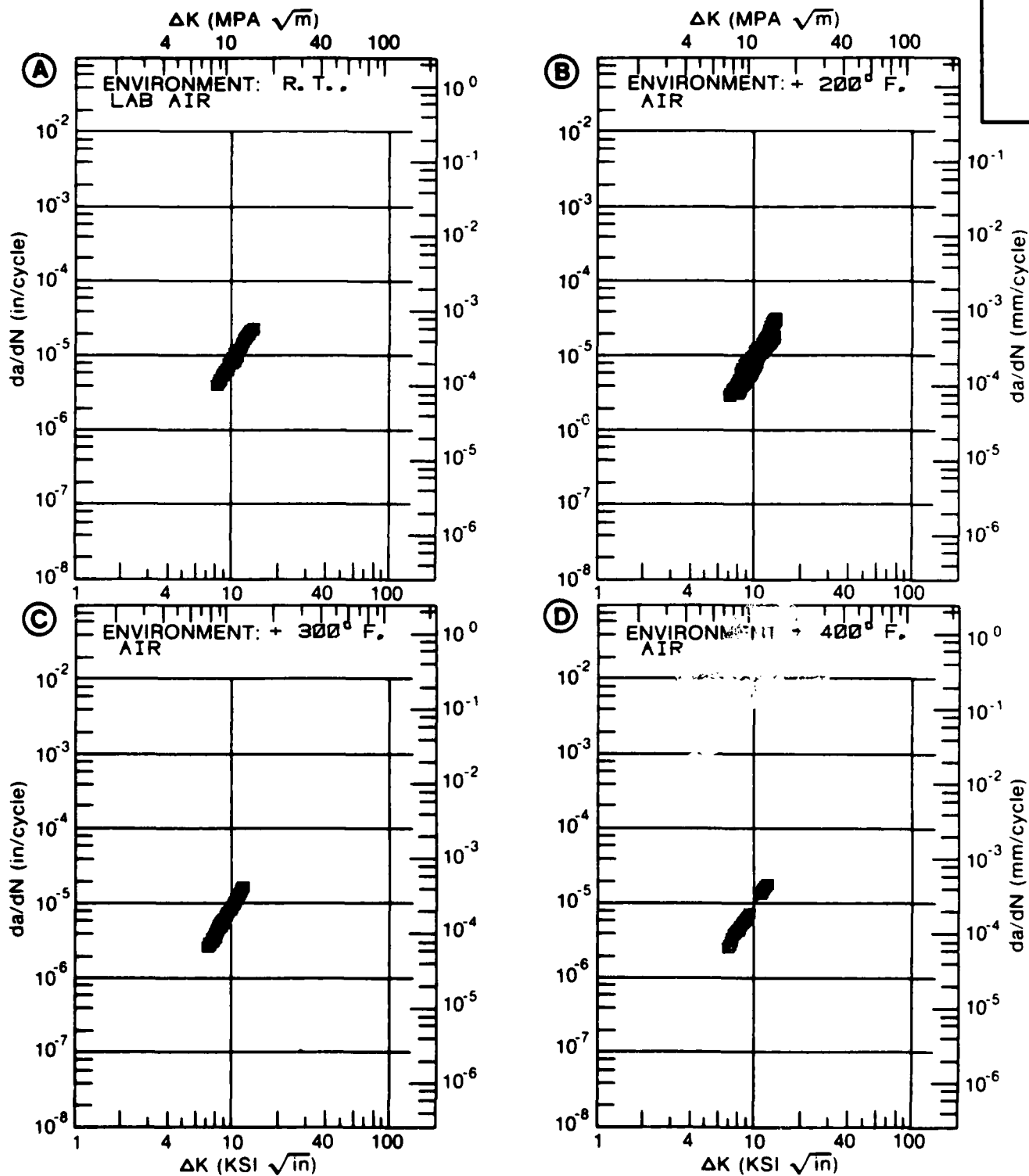


Figure 7.5.3.19

TABLE 7.5.3.20

**FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR**

**DATA ASSOCIATED WITH FIGURE 7.5.3.20 INDICATING EFFECT**

**OF ENVIRONMENT**

**MATERIAL: ALUMINUM  
CONDITION: T351**

**2024**

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		E= R. T. LAB AIR	E=+ 200F AIR	E=+ 300F AIR	E=+ 400F AIR
DELTA K MIN	A: 6.16	1.90			
	B: 5.35		1.66		
	C: 5.60			1.47	
	D: 5.49				1.54
	6.00		2.11	1.94	2.17
	7.00	2.92	3.21	3.48	3.78
	8.00	4.67	4.93	5.65	5.96
	9.00	7.12	7.42	8.54	8.80
	10.00	10.4	10.8	12.3	12.4
	13.00	24.8	27.2	29.7	30.3
	16.00	43.5	50.2	59.8	
DELTA K MAX	A: 16.29	45.4			
	B: 17.32		60.7		
	C: 16.43			65.5	
	D: 15.83				62.8
ROOT MEAN SQUARE PERCENT ERROR		14.89	16.14	9.06	11.01

**LIFE** 0.0-0.5  
**PREDICTION** 0.5-0.8  
**RATIO** 0.8-1.25  
**SUMMARY** 1.25-2.0  
**(NP/NA)** >2.0

CONDITION/HT: T351  
 FORM: 0.50" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 STRESS RATIO: +0.30  
 FREQUENCY: 20.00 HZ

YIELD STRENGTH: 51.5 KSI  
 ULT. STRENGTH: 65.9 KSI  
 SPECIMEN THK: 0.500"  
 SPECIMEN WIDTH: 2.000"  
 REFERENCES: UD009

ALUM.  
 ALLOY

2024

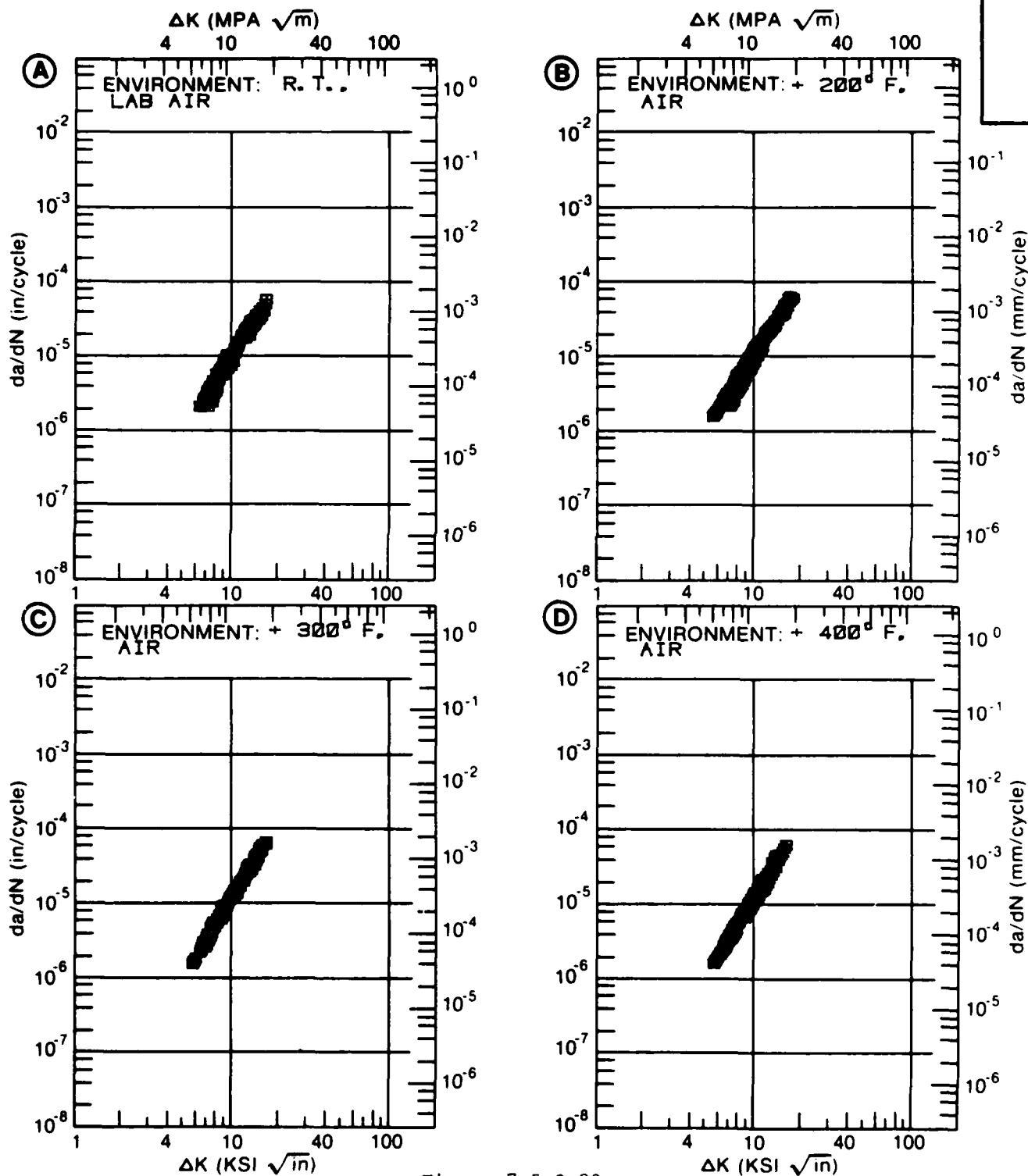


Figure 7.5.3.20

TABLE 7.5.3.21

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.5.3.21 INDICATING EFFECT

OF ENVIRONMENT

MATERIAL: ALUMINUM  
CONDITION: T351

2024

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		E= R. T. LAB AIR	E=+ 200F AIR	E=+ 300F AIR	E=+ 400F AIR
DELTA K A:	5.77	1.92			
DELTA K B:	5.60		1.59		
MIN C:	5.46			1.62	
D:	4.93				1.41
	5.00				1.47
	6.00	2.25	2.09	2.35	2.57
	7.00	3.94	3.77	4.14	4.08
	8.00	6.13	6.13	6.55	6.27
	9.00	9.06	9.31	9.66	9.55
	10.00	13.1	13.5	13.6	14.6
	13.00		33.8	31.7	
DELTA K A:	12.59	35.0			
DELTA K B:	13.83		42.2		
MAX C:	13.79			38.6	
D:	12.26				39.4
ROOT MEAN SQUARE		15.96	7.06	7.78	17.54
PERCENT ERROR					

LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25  
SUMMARY 1.25-2.0  
(NP/NA) >2.0

CONDITION/HT: T351  
 FORM: 0.50" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 STRESS RATIO: +0.50  
 FREQUENCY: 20.00 HZ

YIELD STRENGTH: 51.5 KSI  
 ULT. STRENGTH: 65.9 KSI  
 SPECIMEN THK: 0.500"  
 SPECIMEN WIDTH: 2.000"  
 REFERENCES: UD009

ALUM.  
ALLOY

2024

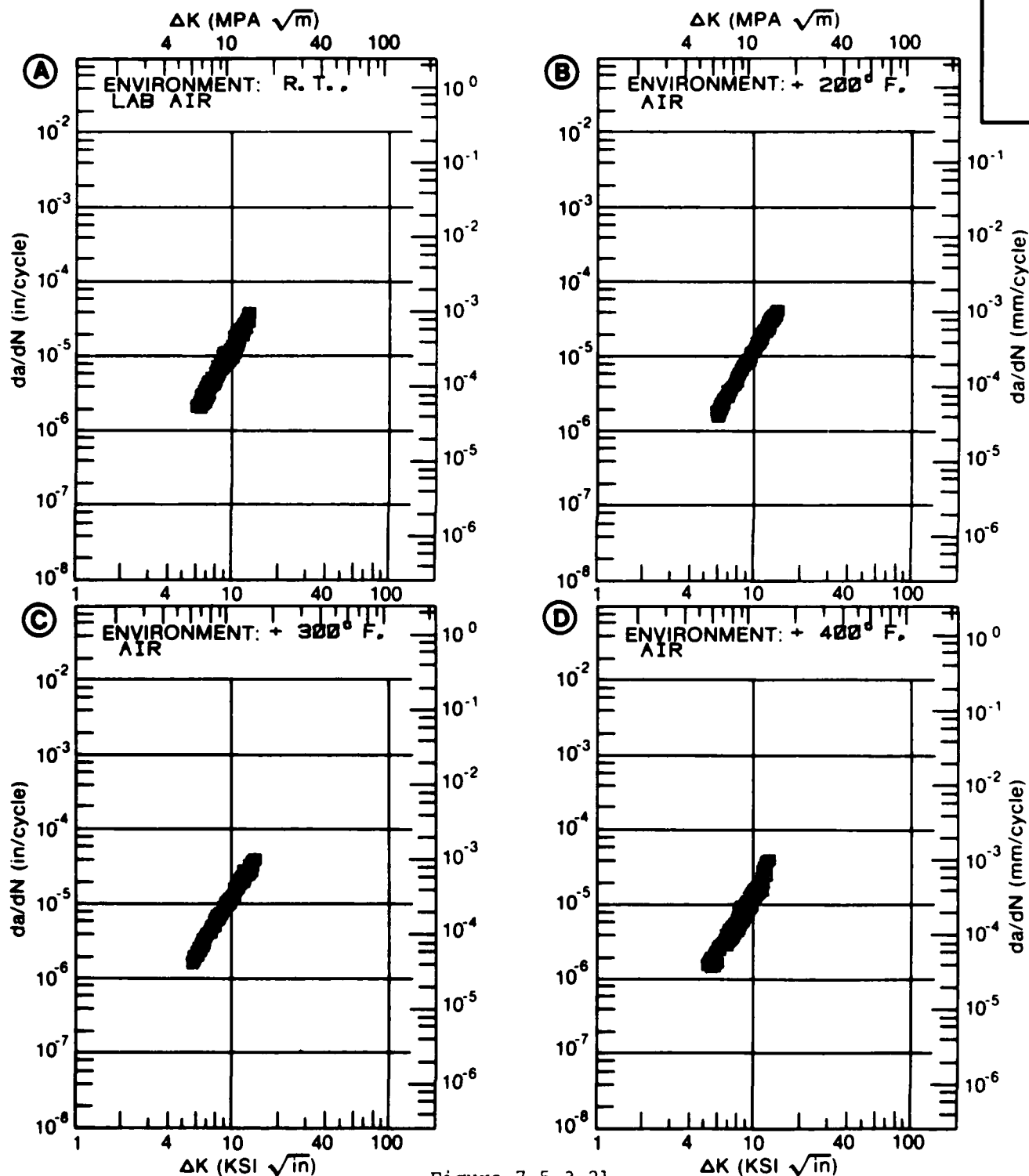


Figure 7.5.3.21

TABLE 7.5.3.22

**FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR**

**DATA ASSOCIATED WITH FIGURE 7.5.3.22 INDICATING EFFECT**

**OF ENVIRONMENT**

**MATERIAL: ALUMINUM  
CONDITION: T351**

**2024**

**DELTA K  
(KSI\*IN\*\*1/2)**

**DA/DN (10\*\*-6 IN. /CYCLE)**

**A**

**B**

**C**

**D**

**E= R. T.**

**E=+ 200F**

**E=+ 300F**

**E=+ 400F**

**: LAB AIR**

**AIR**

**AIR**

**AIR**

DELTA K	A:	5.67	:	1.67				
MIN	B:	6.63	:		3.96			
	C:	6.14	:			3.03		
	D:	4.18	:				1.05	
		5.00	:				1.56	
		6.00	:	2.18			2.85	
		7.00	:	4.10	4.44	4.62	5.10	
		8.00	:	6.60	6.71	7.24	8.47	
		9.00	:	9.89	10.2	10.9	12.8	
		10.00	:	14.4	14.3	15.6	17.6	
DELTA K	A:	10.96	:	20.5				
MAX	B:	10.11	:		14.7			
	C:	10.71	:			19.8		
	D:	10.12	:				18.2	

**ROOT MEAN SQUARE  
PERCENT ERROR**

**6.39**

**5.54**

**6.01**

**15.04**

**LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25  
SUMMARY 1.25-2.0  
(NP/NA) >2.0**

CONDITION/HT: T351  
 FORM: 0.50" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 STRESS RATIO: +0.60  
 FREQUENCY: 20.00 HZ

YIELD STRENGTH: 51.5 KSI  
 ULT. STRENGTH: 65.9 KSI  
 SPECIMEN THK: 0.500"  
 SPECIMEN WIDTH: 2.000"  
 REFERENCES: UD009

ALUM.  
 ALLOY

2024

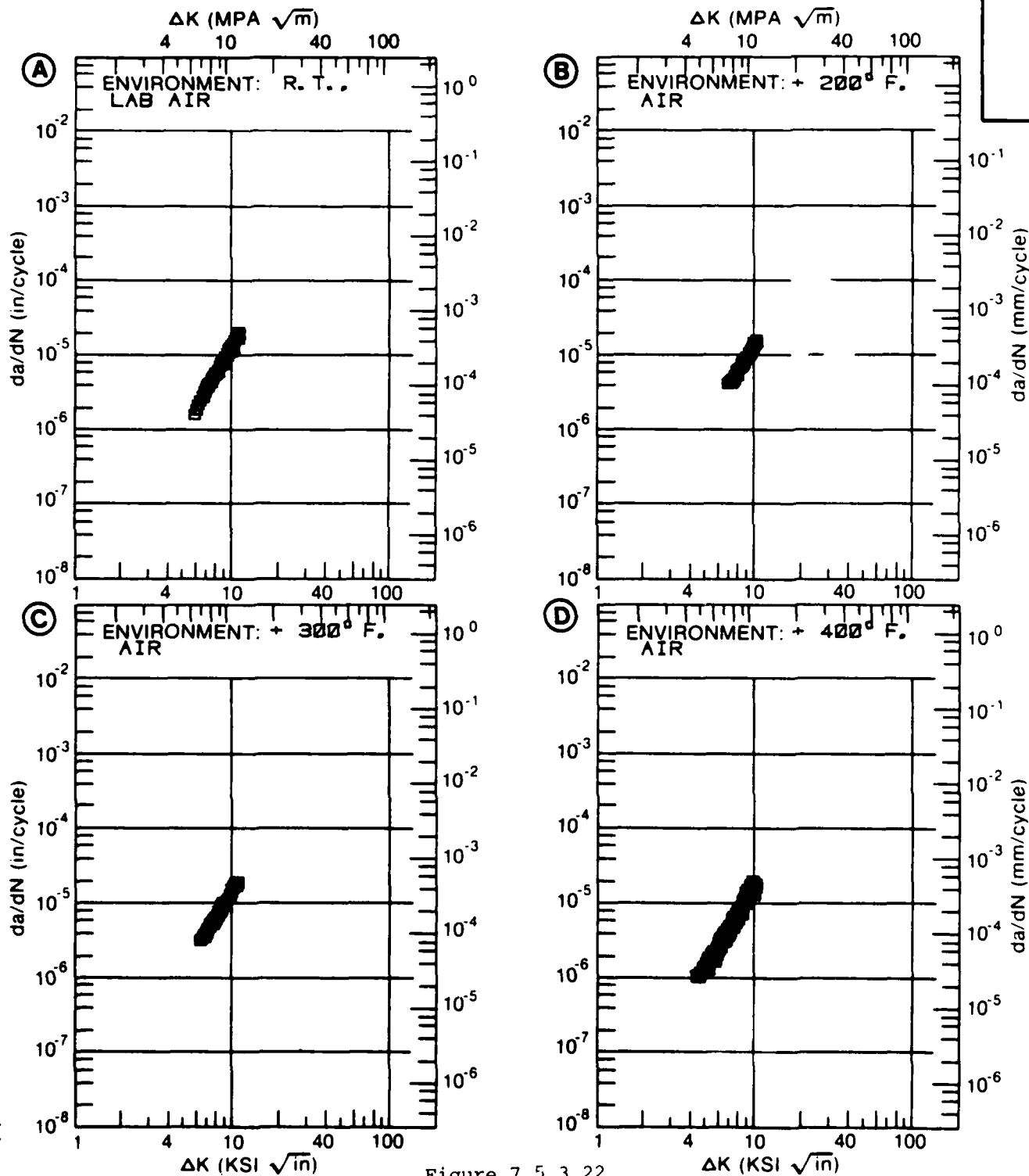


Figure 7.5.3.22

TABLE 7.5.3.23

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.5.3.23 INDICATING EFFECT  
OF ENVIRONMENT

MATERIAL: ALUMINUM		2024			
CONDITION: T351					
DELTA K		DA/DN (10**-6 IN. /CYCLE)			
(KSI*IN**1/2)					
		A	B	C	D
		E= R. T.			
		LAB AIR			
DELTA K	A:	5.32	.130		
	B:				
	C:				
	D:				
		6.00	.411		
		7.00	1.34		
		8.00	2.97		
		9.00	5.22		
	10.00	7.88			
	13.00	17.0			
	16.00	27.7			
DELTA K	A:	19.53	45.9		
	B:				
	C:				
	D:				
ROOT MEAN SQUARE		18.92			
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25	1			
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				



CONDITION/HT: T351  
 FORM: 0.75" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 STRESS RATIO: +0.33  
 FREQUENCY: 25.00 HZ

YIELD STRENGTH: 54.4 KSI  
 ULT. STRENGTH: 69.3 KSI  
 SPECIMEN THK: 0.248"  
 SPECIMEN WIDTH: 2.500"  
 REFERENCES: AL002

ALUM.  
 ALLOY

2024

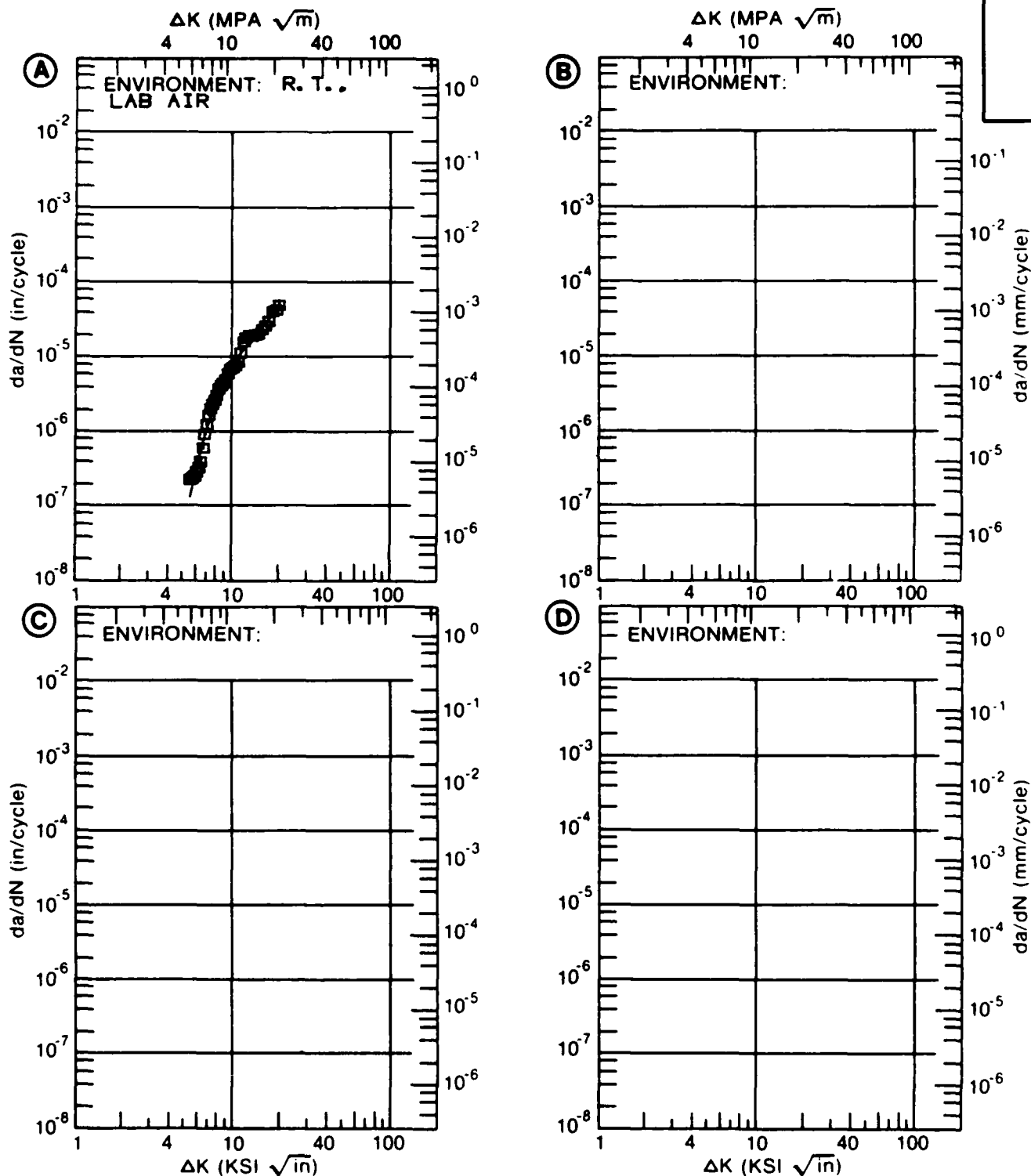


Figure 7.5.3.23

TABLE 7.5.3.24

**FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR**

**DATA ASSOCIATED WITH FIGURE 7.5.3.24 INDICATING EFFECT  
OF ENVIRONMENT**

MATERIAL: ALUMINUM		2024			
CONDITION: T351					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		E= R. T. H. H. A.			
DELTA K MIN	A: 3.11	.085			
	B: 5				
	C:				
	D:				
	3.50	.150			
	4.00	.183			
	5.00	.356			
	6.00	1.02			
	7.00	2.61			
	8.00	5.12			
	9.00	7.96			
DELTA K MAX	10.00	10.8			
	13.00	20.2			
	16.00	36.3			
	20.00	96.4			
	A: 24.63	138.			
	B:				
	C:				
	D:				
ROOT MEAN SQUARE		18.66			
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25	2			
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION/HT: T351  
 FORM: 0.75" TH PLATE  
 SPECIMEN TYPE: WOL  
 ORIENTATION: L-T  
 STRESS RATIO: +0.33  
 FREQUENCY: 25.00 HZ

YIELD STRENGTH:  
 ULT. STRENGTH:  
 SPECIMEN THK: 0.249"  
 SPECIMEN WIDTH: 2.546"  
 REFERENCES: AL010

ALUM.  
ALLOY

2024

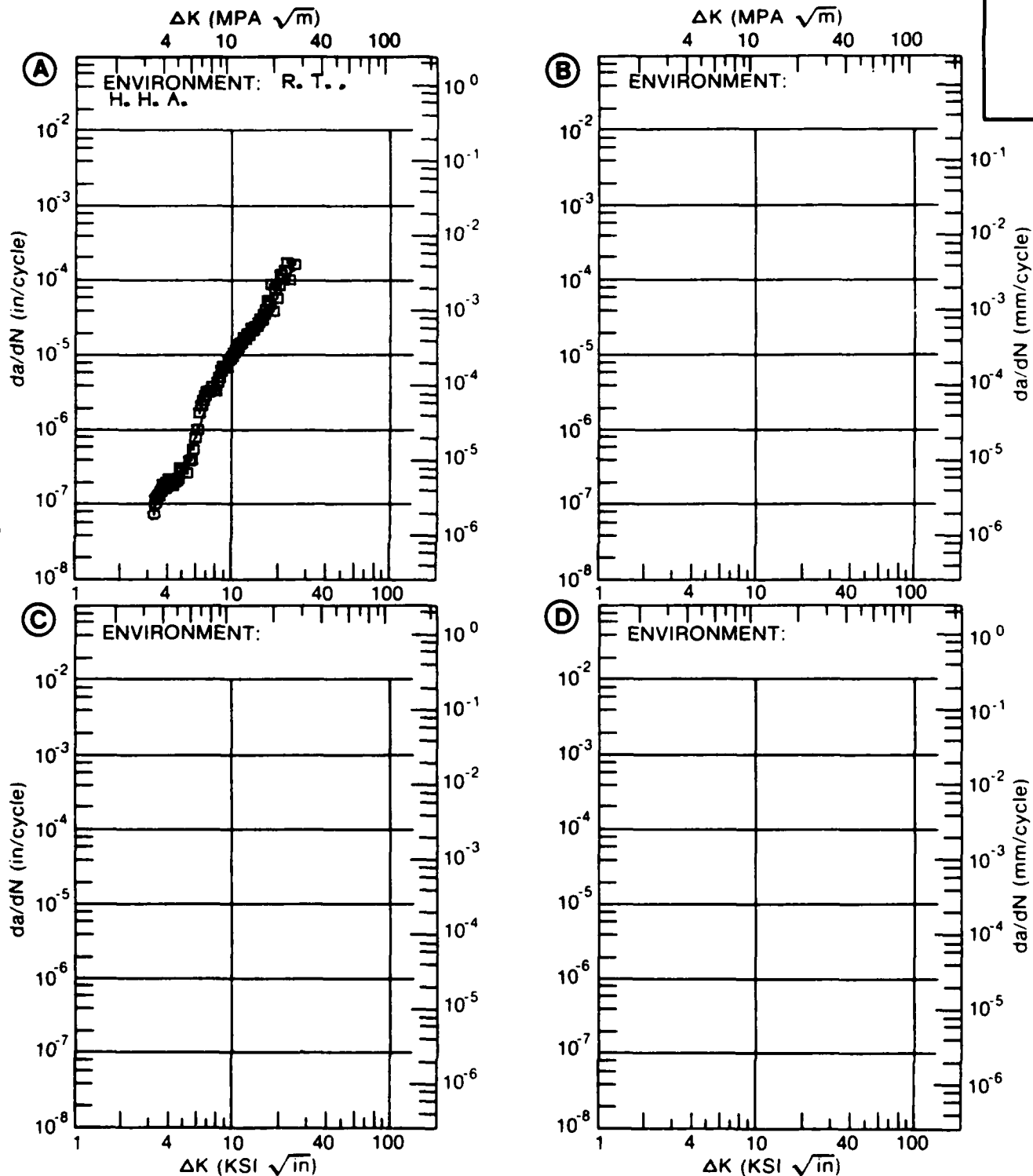


Figure 7.5.3.24

TABLE 7.5.3.25

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.5.3.25 INDICATING EFFECT  
OF ENVIRONMENT

MATERIAL: ALUMINUM 2024  
CONDITION: T351

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R. T. H. H. A.			
DELTA K MIN	A: 3.20	.0726			
	B:				
	C:				
	D:				
	3.50	.139			
	4.00	.330			
	5.00	1.10			
	6.00	2.44			
	7.00	4.33			
	8.00	6.72			
	9.00	9.60			
	10.00	13.0			
	13.00	26.9			
	16.00	49.6			
DELTA K MAX	A: 16.73	57.1			
	B:				
	C:				
	D:				

ROOT MEAN SQUARE 26.03  
PERCENT ERROR

LIFE	0.0-0.5	
PREDICTION	0.5-0.8	1
RATIO	0.8-1.25	1
SUMMARY	1.25-2.0	
(NP/NA)	>2.0	

CONDITION/HT: T351  
 FORM: 1.25" TH PLATE  
 SPECIMEN TYPE: WOL  
 ORIENTATION: L-T  
 STRESS RATIO: +0.33  
 FREQUENCY: 25.00 HZ

YIELD STRENGTH:  
 ULT. STRENGTH:  
 SPECIMEN THK: 0.248- 0.249"  
 SPECIMEN WIDTH: 2.545- 2.546"  
 REFERENCES: AL010

ALUM.  
 ALLOY

2024

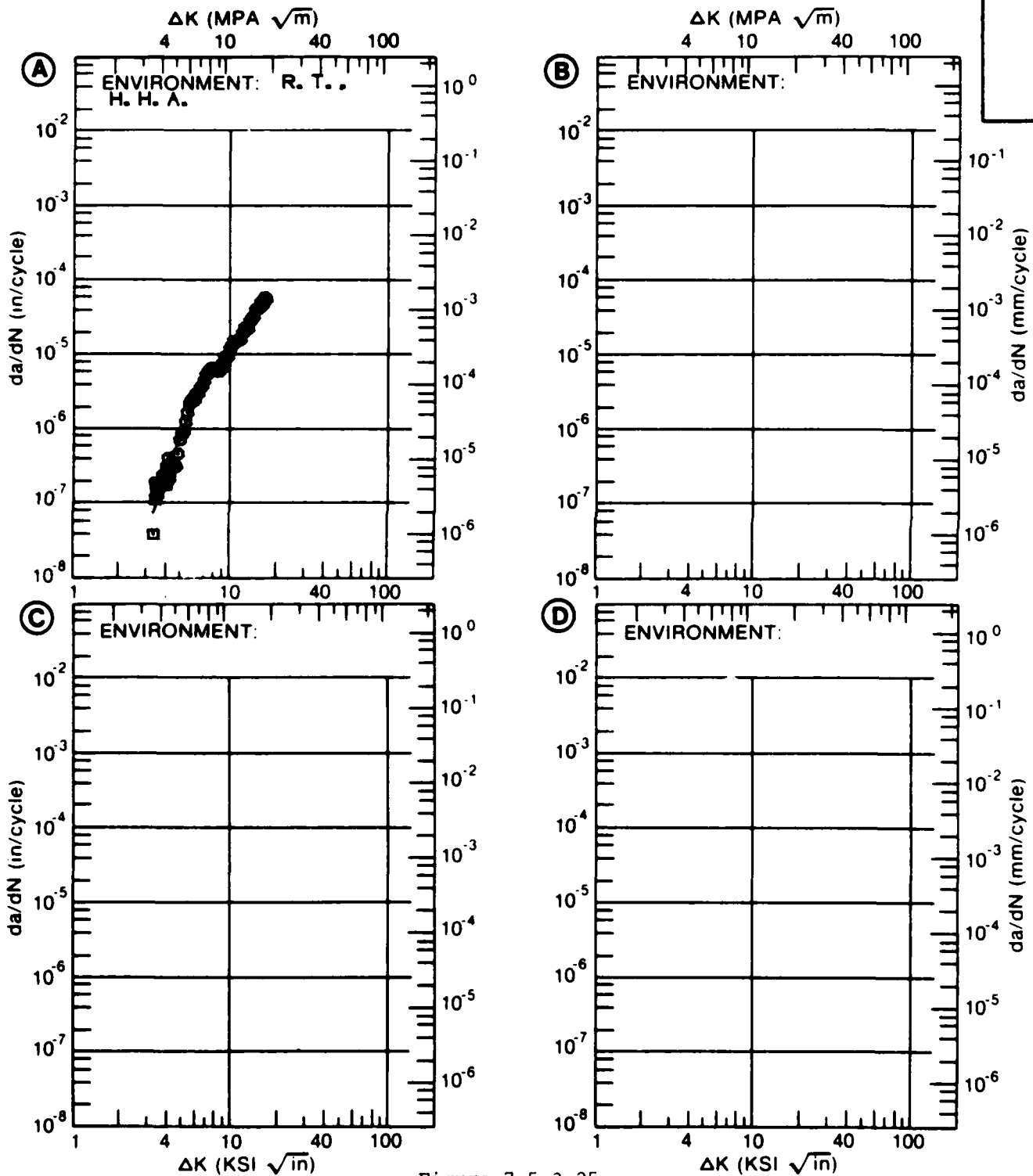


Figure 7.5.3.25

TABLE 7.5.3.26

**FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR**

**DATA ASSOCIATED WITH FIGURE 7.5.3.26 INDICATING EFFECT**

**OF STRESS RATIO**

MATERIAL: ALUMINUM		2024			
CONDITION: T3511					
ENVIRONMENT: R. T. , LAB AIR					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		R=+0. 05	R=+0. 50		
DELTA K MIN	A: 4. 39	. 0786			
	B: 2. 35		. 0724		
	C:				
	D:				
	2. 50		. 0818		
	3. 00		. 113		
	3. 50		. 144		
	4. 00		. 175		
DELTA K MAX	5. 00	. 129			
	6. 00	. 177			
	7. 00	. 229			
	A: 7. 98	. 361			
	B: 4. 49		. 204		
	C:				
	D:				
ROOT MEAN SQUARE		31. 67	22. 07		
PERCENT ERROR					
LIFE	0. 0-0. 5				
PREDICTION	0. 5-0. 8				
RATIO	0. 8-1. 25				
SUMMARY	1. 25-2. 0				
(NP/NA)	>2. 0				

CONDITION/HT: T3511  
 FORM: EXTRUSION  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 FREQUENCY: 9.00 HZ  
 ENVIRONMENT: R. T., LAB AIR

YIELD STRENGTH: 58.7 KSI  
 ULT. STRENGTH: 79.3 KSI  
 SPECIMEN THK: 0.370"  
 SPECIMEN WIDTH: 4.000"  
 REFERENCES: BW001

ALUM.  
ALLOY

2024

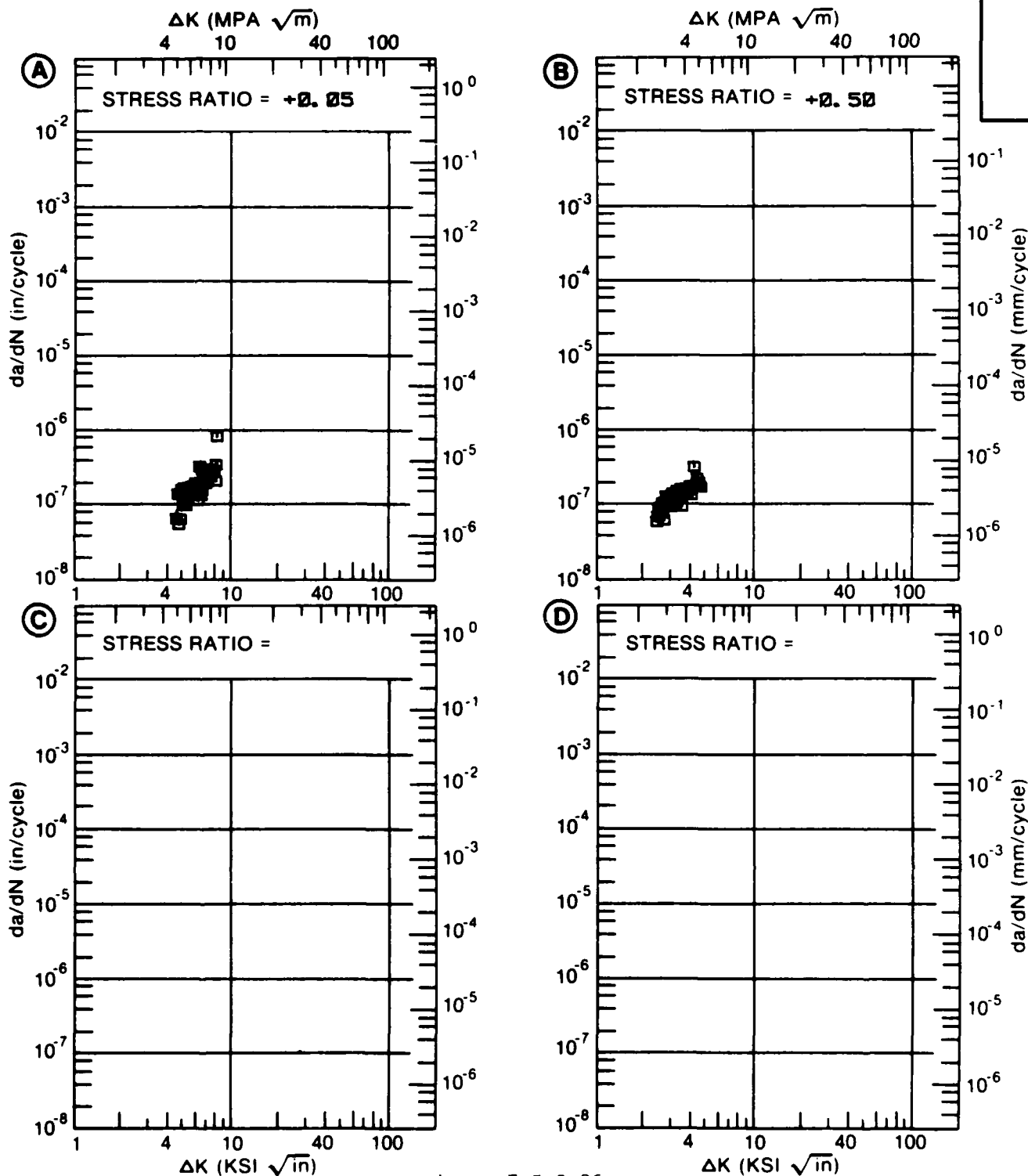


Figure 7.5.3.26

TABLE 7.5.3.27

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.5.3.27 INDICATING EFFECT

## OF STRESS RATIO

MATERIAL: ALUMINUM 2024  
 CONDITION: T3511  
 ENVIRONMENT: R. T. , H. H. A.

DELTA K  
 (KSI\*IN\*\*1/2)

DA/DN (10\*\*-6 IN. /CYCLE)

		A	B	C	D
		R=+0.05	R=+0.50		
DELTA K MIN	A: 5.00	.0615			
	B: 2.35		.0342		
	C:				
	D:				
	2.50		.0555		
	3.00		.114		
	3.50		.160		
	4.00		.280		
	5.00	.0615			
	6.00	.141			
DELTA K MAX	7.00	.514			
	8.00	1.72			
	9.00	4.22			
	10.00	7.05			
	A: 10.62	7.90			
	B: 4.18		.380		
	C:				
	D:				

ROOT MEAN SQUARE  
 PERCENT ERROR

33.49

26.13

LIFE 0.0-0.5  
 PREDICTION 0.5-0.8  
 RATIO 0.8-1.25  
 SUMMARY 1.25-2.0  
 (NP/NA) >2.0



CONDITION/HT: T3511  
 FORM: EXTRUSION  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 FREQUENCY: 9.00 HZ  
 ENVIRONMENT: R. T., H. H. A.

YIELD STRENGTH: 58.7 KSI  
 ULT. STRENGTH: 79.3 KSI  
 SPECIMEN THK: 0.370"  
 SPECIMEN WIDTH: 4.000"  
 REFERENCES: BW001

ALUM.  
 ALLOY

2024

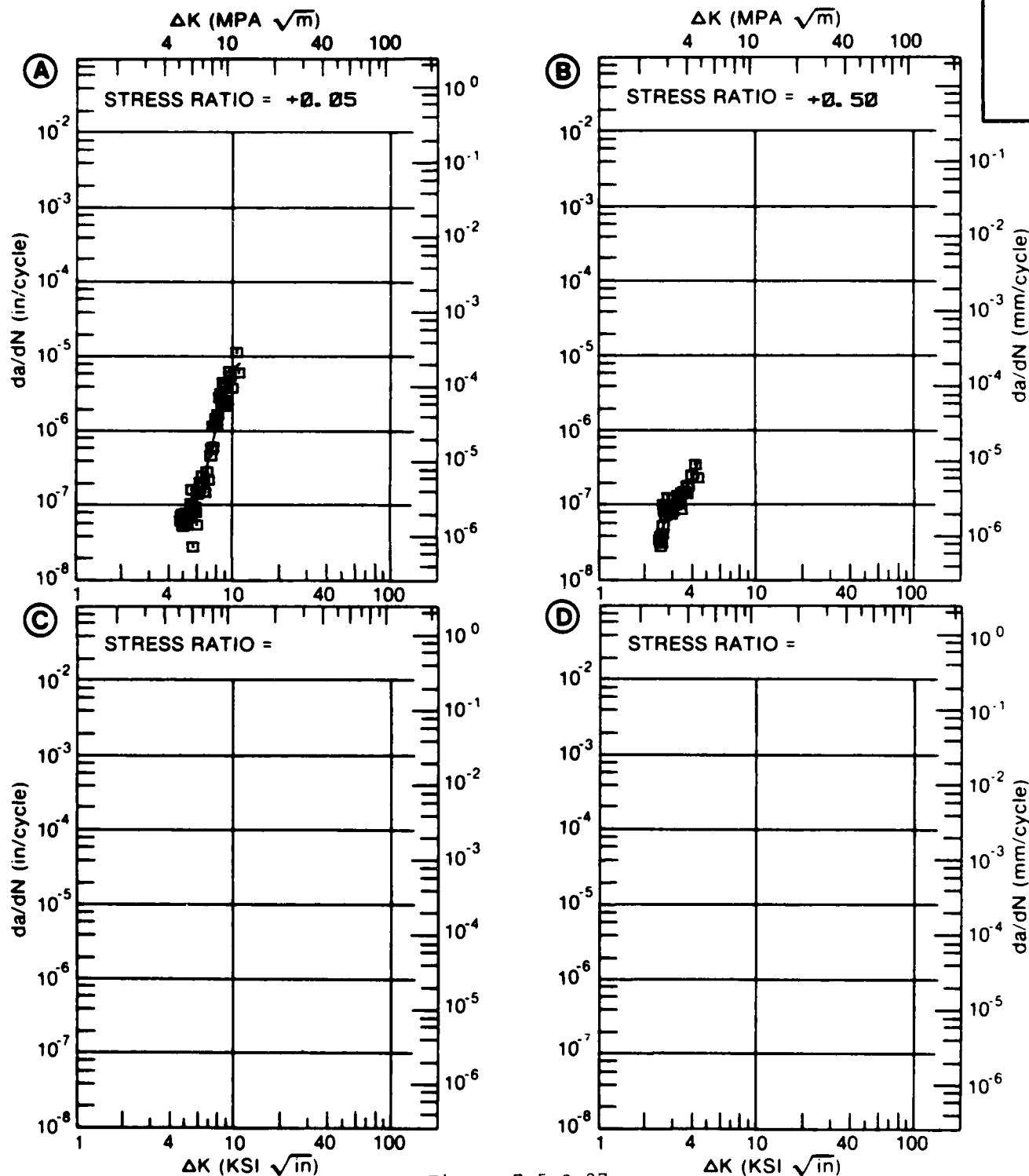


Figure 7.5.3.27

TABLE 7.5.3.28

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.5.3.28 INDICATING EFFECT  
OF STRESS RATIO

MATERIAL: ALUMINUM 2024  
CONDITION: T3511  
ENVIRONMENT: R. T. , H. H. A.

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		R=+0.50			
DELTA K	A: 3.57	.169			
MIN	B:				
	C:				
	D:				
	4.00	.164			
	5.00	.431			
	6.00	1.38			
	7.00	3.12			
	8.00	5.19			
	9.00	7.30			
	10.00	9.35			
	13.00	16.2			
	16.00	28.0			
	20.00	62.3			
	25.00	173.			
DELTA K	A: 28.79	239.			
MAX	B:				
	C:				
	D:				

ROOT MEAN SQUARE 29.74  
PERCENT ERROR

LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25  
SUMMARY 1.25-2.0  
(NP/NA) >2.0

CONDITION/HT: T3511  
 FORM: EXTRUSION  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T  
 FREQUENCY: 9.00 HZ  
 ENVIRONMENT: R. T., H. H. A.

YIELD STRENGTH: 58.7 KSI  
 ULT. STRENGTH: 79.3 KSI  
 SPECIMEN THK: 0.370"  
 SPECIMEN WIDTH: 5.000"  
 REFERENCES: BW001

ALUM.  
 ALLOY

2024

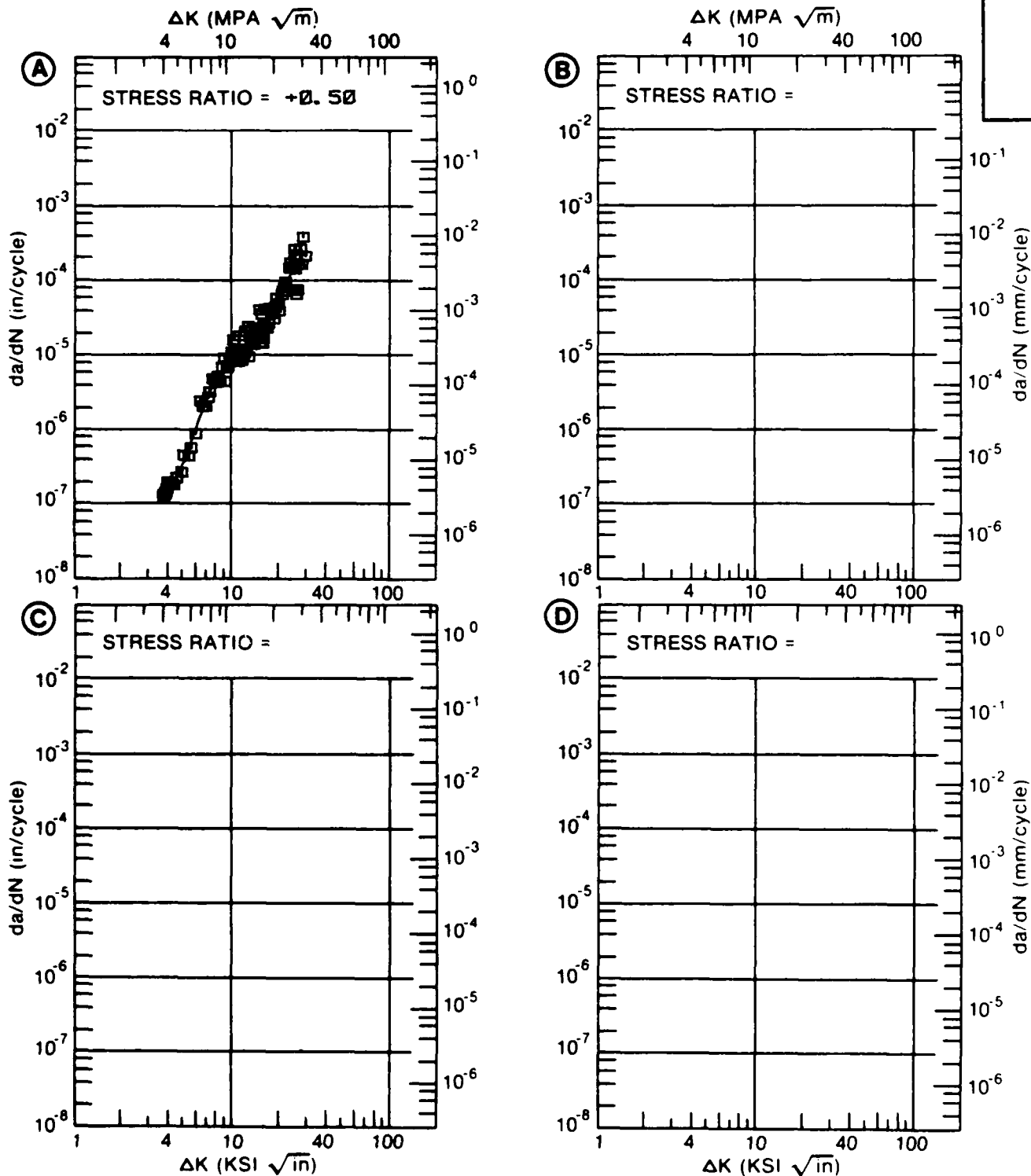


Figure 7.5.3.28

TABLE 7.5.3.29

**FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR**

**DATA ASSOCIATED WITH FIGURE 7.5.3.29 INDICATING EFFECT  
OF STRESS RATIO**

MATERIAL: ALUMINUM 2024  
CONDITION: T3511  
ENVIRONMENT: R. T. , H. H. A.

DELTA K (KSI*IN**1/2)	DA/DN (10**-6 IN. /CYCLE)			
	A	B	C	D
	R=-1.00	R=-0.20	R=+0.04	R=+0.40
A:				
DELTA K B:				
MIN C:				
D:				
200.00				
A:				
DELTA K B:				
MAX C:				
D:				
ROOT MEAN SQUARE	0.00	0.00	0.00	0.00
PERCENT ERROR				

LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25  
SUMMARY 1.25-2.0  
(NP/NA) >2.0

CONDITION/HT: T3511  
 FORM: 0.20" TH EXTRUSION  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T  
 FREQUENCY: 6.0 HZ  
 ENVIRONMENT: R. T., H. H. A.

YIELD STRENGTH: 61.2 KSI  
 ULT. STRENGTH: 80.4 KSI  
 SPECIMEN THK:  
 SPECIMEN WIDTH: 4.000"  
 REFERENCES: BW005

ALUM.  
 ALLOY

2024

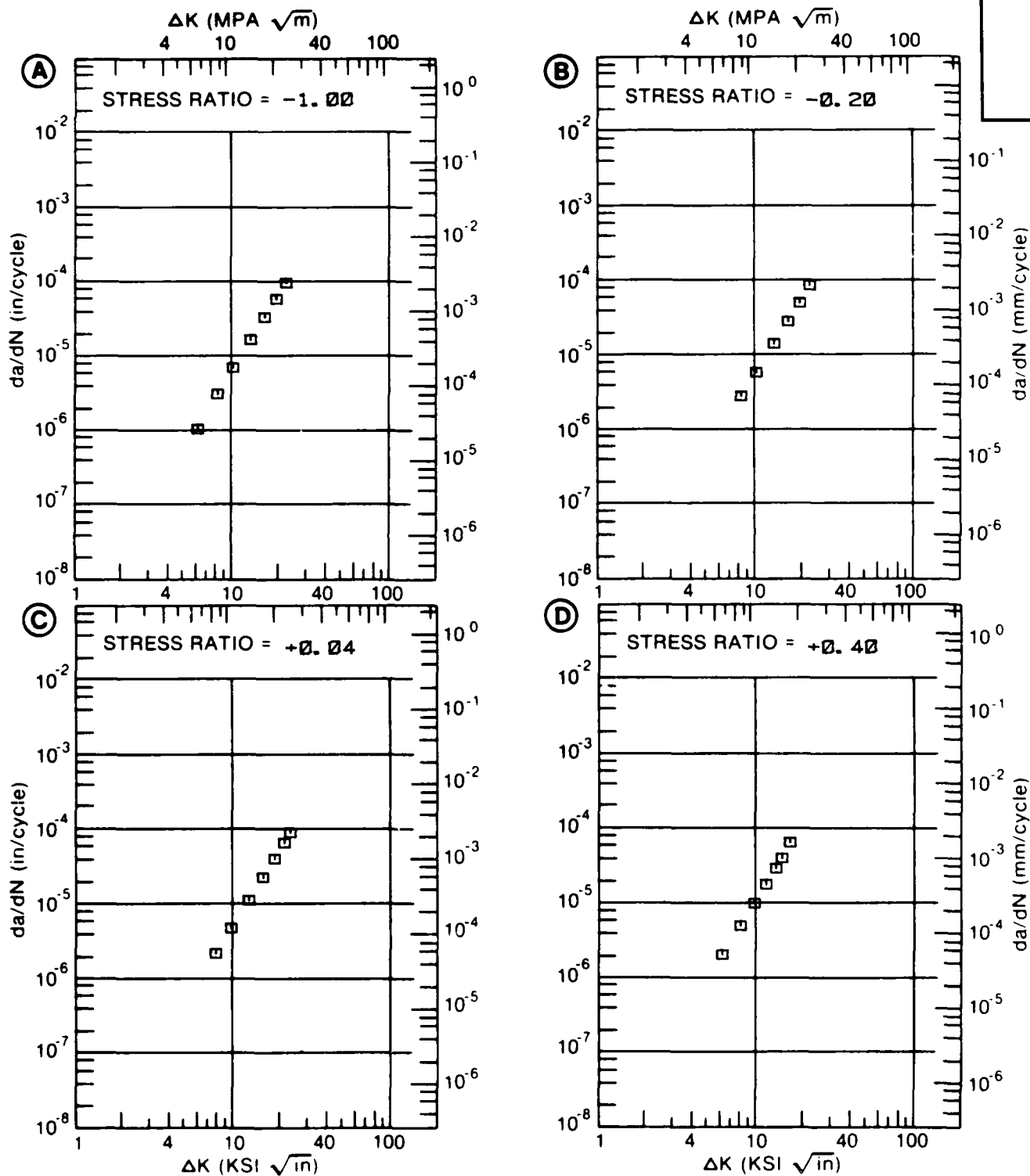


Figure 7.5.3.29

TABLE 7.5.3.30

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.5.3.30 INDICATING EFFECT

OF STRESS RATIO

MATERIAL: ALUMINUM 2024  
CONDITION: T42  
ENVIRONMENT: R. T. , LAB AIR

DELTA K  
(KSI\*IN\*\*1/2)

DA/DN (10\*\*-6 IN./CYCLE)

A

B

C

D

R=-1.00

R=+0.02

R=+0.50

DELTA K A: 5.48 :  
MIN B: 5.32 :  
C: 4.18 :  
D:

.651

.187

.187

5.00 :

.424

6.00 :

1.04

.275

1.20

7.00 :

2.03

.685

2.33

8.00 :

3.29

1.53

3.86

9.00 :

4.76

2.75

5.73

10.00 :

6.41

4.25

7.89

13.00 :

12.7

9.49

15.8

16.00 :

22.2

15.1

25.7

20.00 :

44.3

23.6

42.5

25.00 :

101.

40.0

72.3

30.00 :

223.

70.9

118.

35.00 :

468.

134.

188.

40.00 :

939.

271.

50.00 :

2809.

1131.

60.00 :

3097.

DELTA K A: 55.92 :  
MAX B: 67.71 :  
C: 39.01 :  
D:

4173.

4480.

271.

ROOT MEAN SQUARE  
PERCENT ERROR

28.64

47.76

16.10

LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25  
SUMMARY 1.25-2.0  
(NP/NA) >2.0

CONDITION/HT: T42  
 FORM: 0.75" TH PLATE  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T  
 FREQUENCY: 10.00 HZ  
 ENVIRONMENT: R. T., LAB AIR

YIELD STRENGTH: 45.4 KSI  
 ULT. STRENGTH: 68.5 KSI  
 SPECIMEN THK: 0.250"  
 SPECIMEN WIDTH: 4.000"  
 REFERENCES: MA006

ALUM.  
 ALLOY

2024

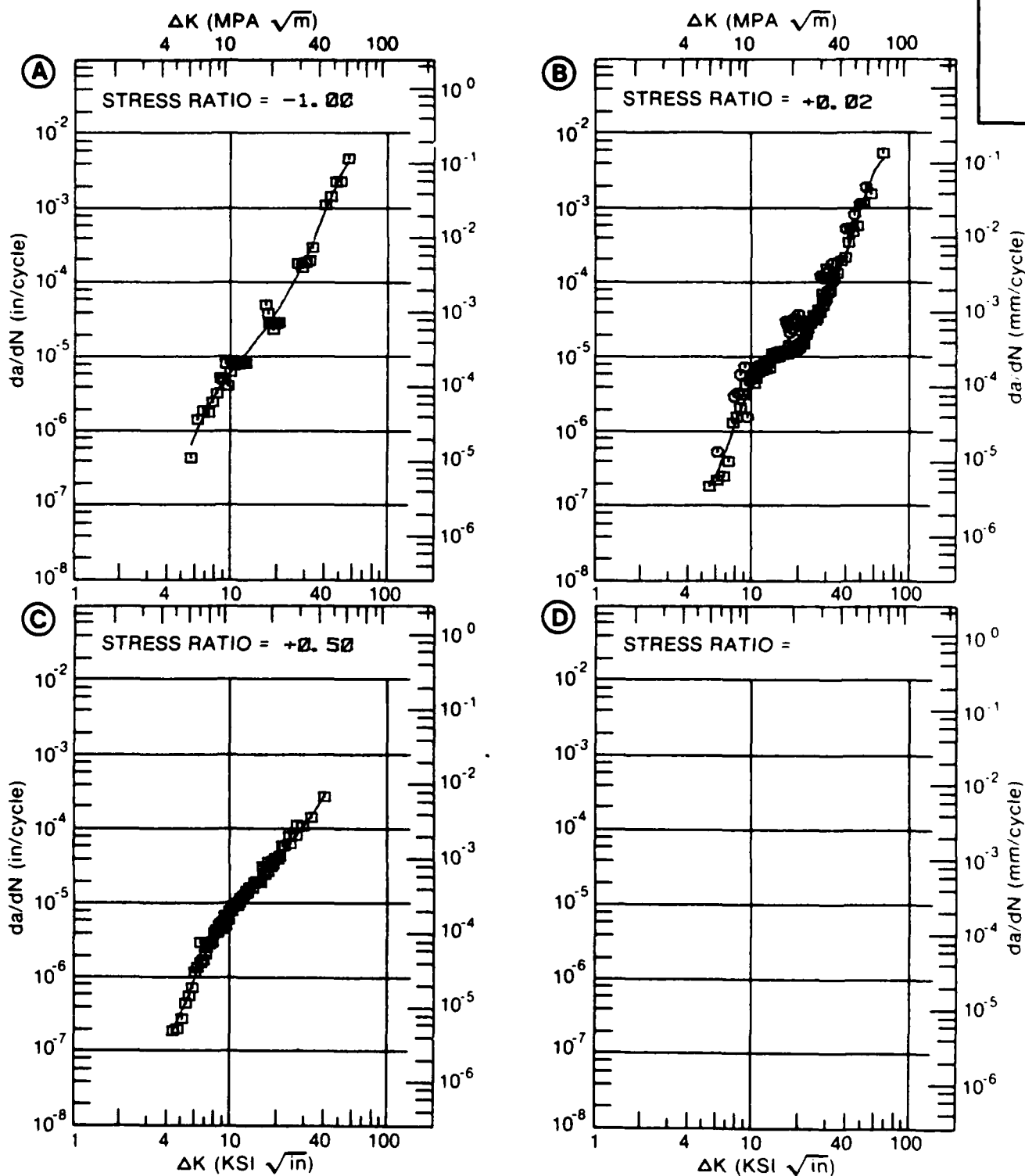


Figure 7.5.3.30

TABLE 7.5.3.31

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.5.3.31 INDICATING EFFECT

OF STRESS RATIO

MATERIAL: ALUMINUM 2024  
CONDITION: T62  
ENVIRONMENT: R. T. , H. H. A.

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		R=+0.10	R=+0.30		
DELTA K	A: 4.12	.24			
B: 3.95			.08		
MIN C: 1					
D:					
	4.00		.0912		
	5.00	.312	.465		
	6.00	.503	1.32		
	7.00	.916	2.74		
	8.00	1.74	4.68		
	9.00	3.03	7.13		
	10.00	4.68	10.1		
	13.00	11.8	22.4		
	16.00	23.1	42.8		
	20.00		96.4		
DELTA K	A: 19.00	37.5			
B: 20.04			97.2		
MAX C:					
D:					

ROOT MEAN SQUARE 14.55 35.15  
PERCENT ERROR

LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25 1  
SUMMARY 1.25-2.0 1  
(NP/NA) >2.0



CONDITION/HT: T62  
 FORM: 0.13" TH SHEET  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T  
 FREQUENCY: 1.00 HZ  
 ENVIRONMENT: R. T., H. H. A.

YIELD STRENGTH: 60.3 KSI  
 ULT. STRENGTH: 74.9 KSI  
 SPECIMEN THK: 0.125"  
 SPECIMEN WIDTH: 6.000"  
 REFERENCES: GD004

ALUM.  
 ALLOY

2024

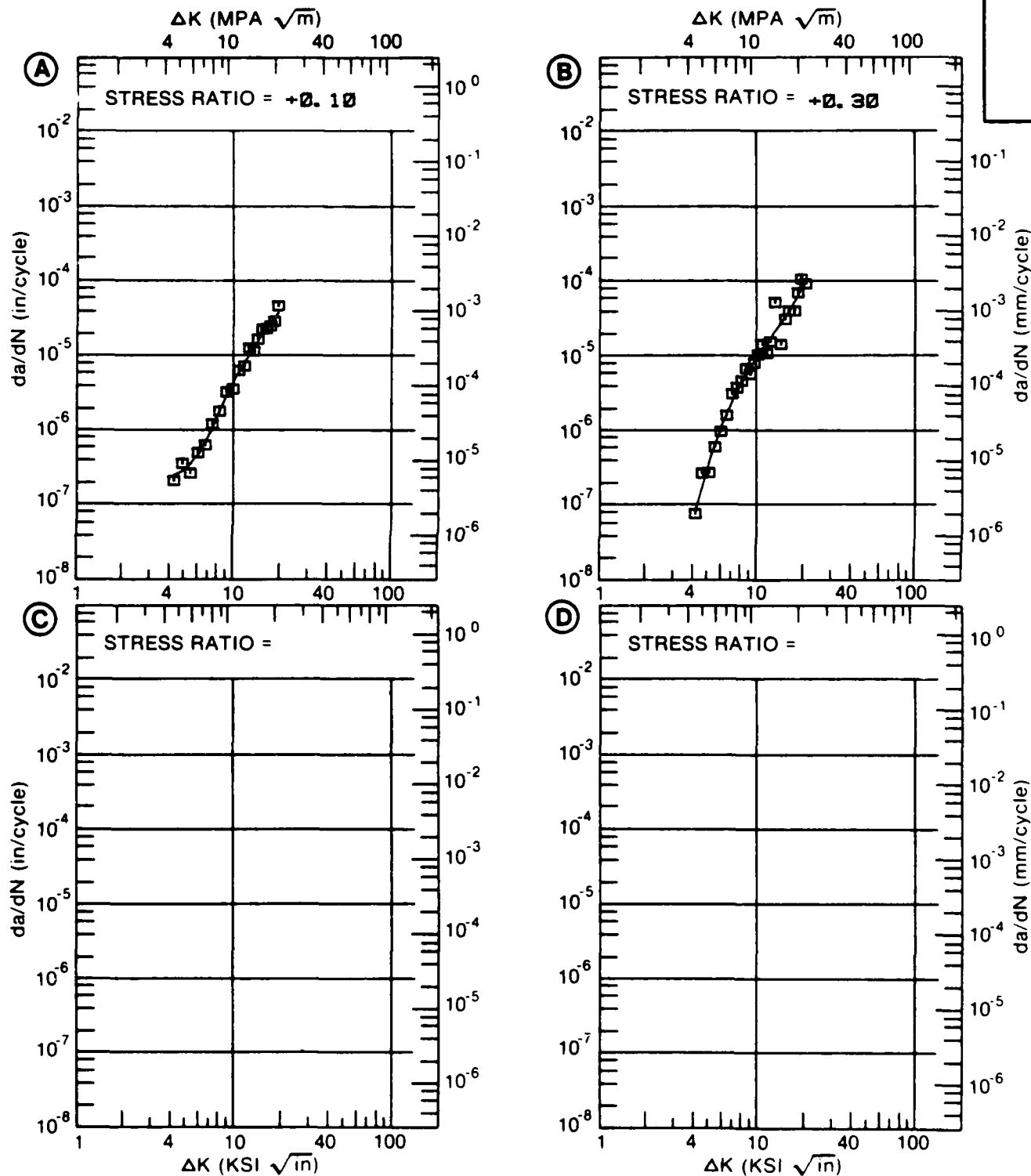


Figure 7.5.3.31

TABLE 7.5.3.32

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.5.3.32 INDICATING EFFECT  
OF STRESS RATIO

MATERIAL: ALUMINUM		2024			
CONDITION: T62					
ENVIRONMENT: R. T. , S. T. W.					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		R=+0. 10	R=+0. 50	R=+0. 70	
DELTA K MIN	A: 4. 46	. 336			
	B: 2. 50		. 138		
	C: 2. 69			. 150	
	D:				
	3. 00		. 279	. 268	
	3. 50		. 374	. 413	
	4. 00		. 561	. 716	
	5. 00	. 772	1. 43	2. 05	
	6. 00	1. 73	3. 17	3. 66	
	7. 00	3. 63	5. 53	5. 78	
	8. 00	5. 17	7. 59	10. 7	
	9. 00	6. 29			
	10. 00	7. 61			
	13. 00	20. 8			
	16. 00	53. 1			
DELTA K MAX	A: 19. 67	57. 0			
	B: 8. 83		8. 35		
	C: 8. 21			12. 0	
	D:				
ROOT MEAN SQUARE		17. 67	32. 04	13. 00	
PERCENT ERROR					
LIFE	0. 0-0. 5				
PREDICTION	0. 5-0. 8				
RATIO	0. 8-1. 25			1	
SUMMARY	1. 25-2. 0	1	1		
(NP/NA)	>2. 0				

CONDITION/HT: T62  
 FORM: 0.13" TH SHEET  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T  
 FREQUENCY: 1.00 HZ  
 ENVIRONMENT: R. T., S. T. W.

YIELD STRENGTH: 60.3 KSI  
 ULT. STRENGTH: 74.9 KSI  
 SPECIMEN THK: 0.125"  
 SPECIMEN WIDTH: 6.000"  
 REFERENCES: GD004

ALUM.  
 ALLOY

2024

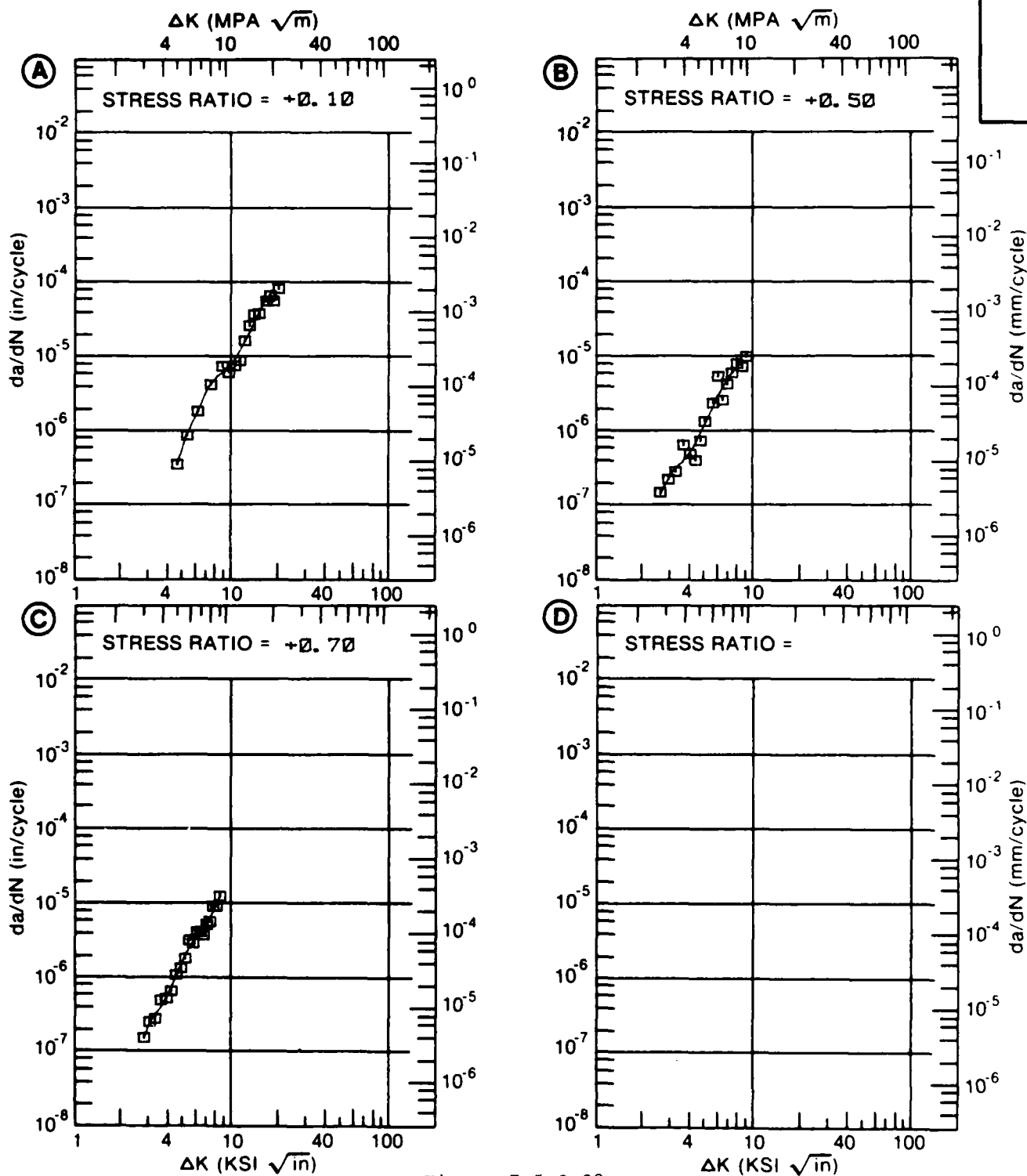


Figure 7.5.3.32

TABLE 7.5.3.33

**FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR**

**DATA ASSOCIATED WITH FIGURE 7.5.3.33 INDICATING EFFECT  
OF STRESS RATIO**

MATERIAL: ALUMINUM 2024  
CONDITION: T62  
ENVIRONMENT: R. T. , DRY AIR

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		R=+0. 10	R=+0. 30	R=+0. 50	
DELTA K MIN	A: 4. 17	. 299			
	B: 3. 56		. 129		
	C: 2. 36			. 0347	
	D:				
	2. 50			. 0456	
	3. 00			. 105	
	3. 50			. 206	
	4. 00		. 190	. 366	
	5. 00	. 812	. 711	. 947	
	6. 00	1. 89	1. 86	2. 07	
	7. 00	3. 47	3. 54	4. 08	
	8. 00	5. 56	5. 68	7. 43	
	9. 00	8. 15	8. 24	10. 6	
DELTA K MAX	10. 00	11. 3	11. 3	13. 1	
	13. 00	24. 6	25. 8		
	16. 00	46. 7	58. 9		
	A: 16. 21	48. 7			
	B: 19. 40		125.		
MAX	C: 12. 69			29. 0	
	D:				
ROOT MEAN SQUARE		10. 91	11. 42	22. 01	
PERCENT ERROR					
LIFE	0. 0-0. 5				
PREDICTION	0. 5-0. 8				
RATIO	0. 8-1. 25				
SUMMARY	1. 25-2. 0	1	1	1	
(NP/NA)	>2. 0				

CONDITION/HT: T62  
 FORM: 0.13" TH SHEET  
 SPECIMEN TYPE: CCP  
 ORIENTATION: T-L  
 FREQUENCY: 6.00 HZ  
 ENVIRONMENT: R. T., DRY AIR

YIELD STRENGTH: 58.2 KSI  
 ULT. STRENGTH: 73.5 KSI  
 SPECIMEN THK: 0.125"  
 SPECIMEN WIDTH: 6.000"  
 REFERENCES GD004

ALUM.  
 ALLOY

2024

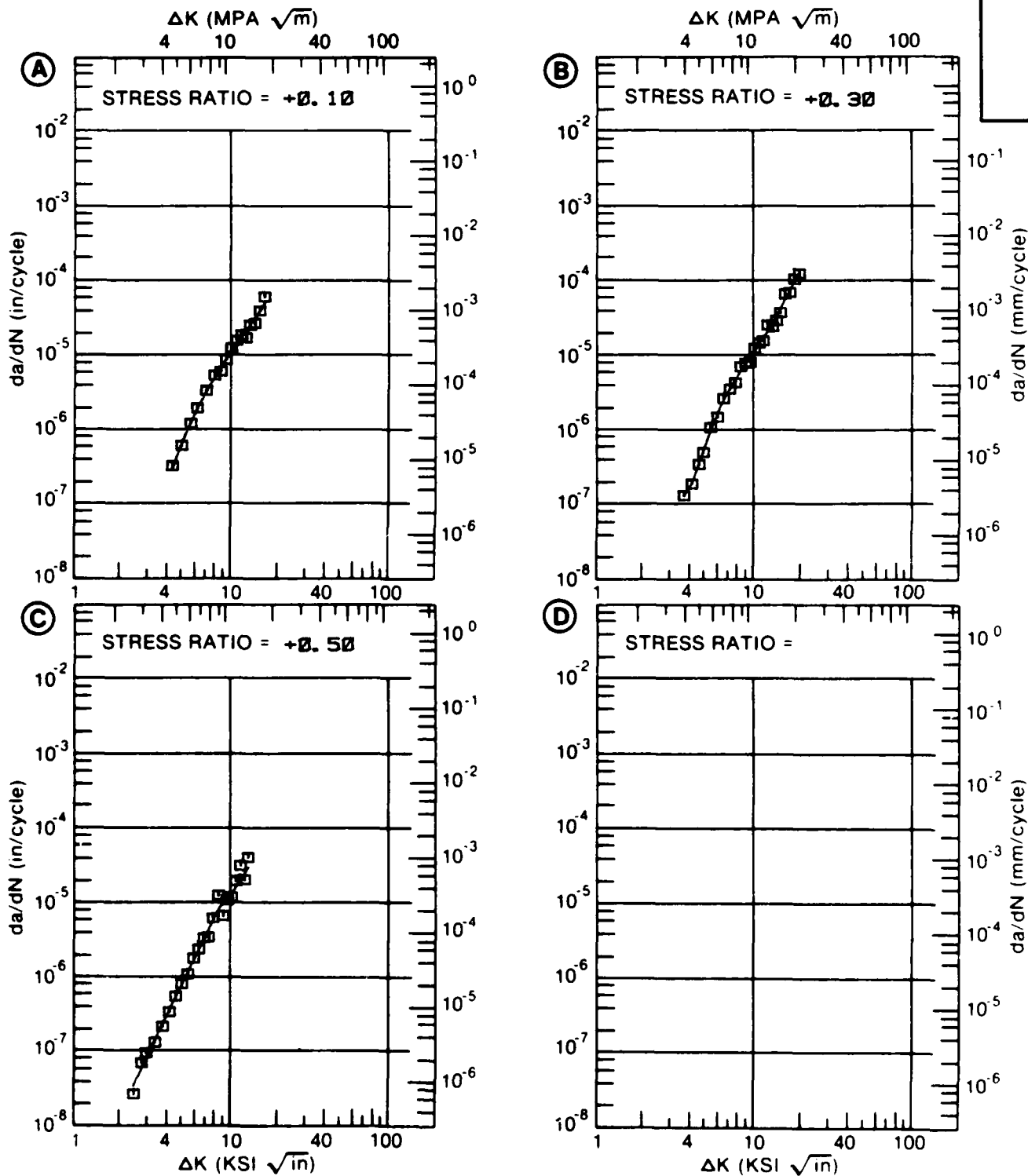


Figure 7.5.3.33

TABLE 7.5.3.34

**FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR**

**DATA ASSOCIATED WITH FIGURE 7.5.3.34 INDICATING EFFECT**

**OF STRESS RATIO**

MATERIAL: ALUMINUM 2024  
CONDITION: T62  
ENVIRONMENT: R. T. , H. H. A.

DELTA K (KSI*IN**1/2)		DA/DN (10** <sup>-6</sup> IN. /CYCLE)			
		A	B	C	D
		R=+0. 10	R=+0. 30	R=+0. 50	
DELTA K	A:				
MIN	B: 4. 77		. 573		
	C: 2. 25			. 118	
	D:				
	2. 50			. 126	
	3. 00			. 178	
	3. 50			. 289	
	4. 00			. 484	
	5. 00		. 787	1. 26	
	6. 00		2. 12	2. 70	
	7. 00		3. 94	4. 70	
	8. 00		6. 07	6. 84	
	9. 00		8. 59	9. 52	
	10. 00		11. 7	14. 5	
	13. 00		29. 9	48. 5	
DELTA K	A:				
MAX	B: 13. 80		39. 3		
	C: 14. 13			56. 2	
	D:				
ROOT MEAN SQUARE		0. 00	28. 43	19. 50	
PERCENT ERROR					
LIFE	0. 0-0. 5				
PREDICTION	0. 5-0. 8				
RATIO	0. 8-1. 25			1	
SUMMARY	1. 25-2. 0		1		
(NP/NA)	>2. 0				

CONDITION/HT: T62  
 FORM: 0.13" TH SHEET  
 SPECIMEN TYPE: CCP  
 ORIENTATION: T-L  
 FREQUENCY: 1.00 HZ  
 ENVIRONMENT: R. T., H. H. A.

YIELD STRENGTH: 58.2 KSI  
 ULT. STRENGTH: 73.5 KSI  
 SPECIMEN THK: 0.125"  
 SPECIMEN WIDTH: 6.000"  
 REFERENCES GD004

ALUM.  
 ALLOY

2024

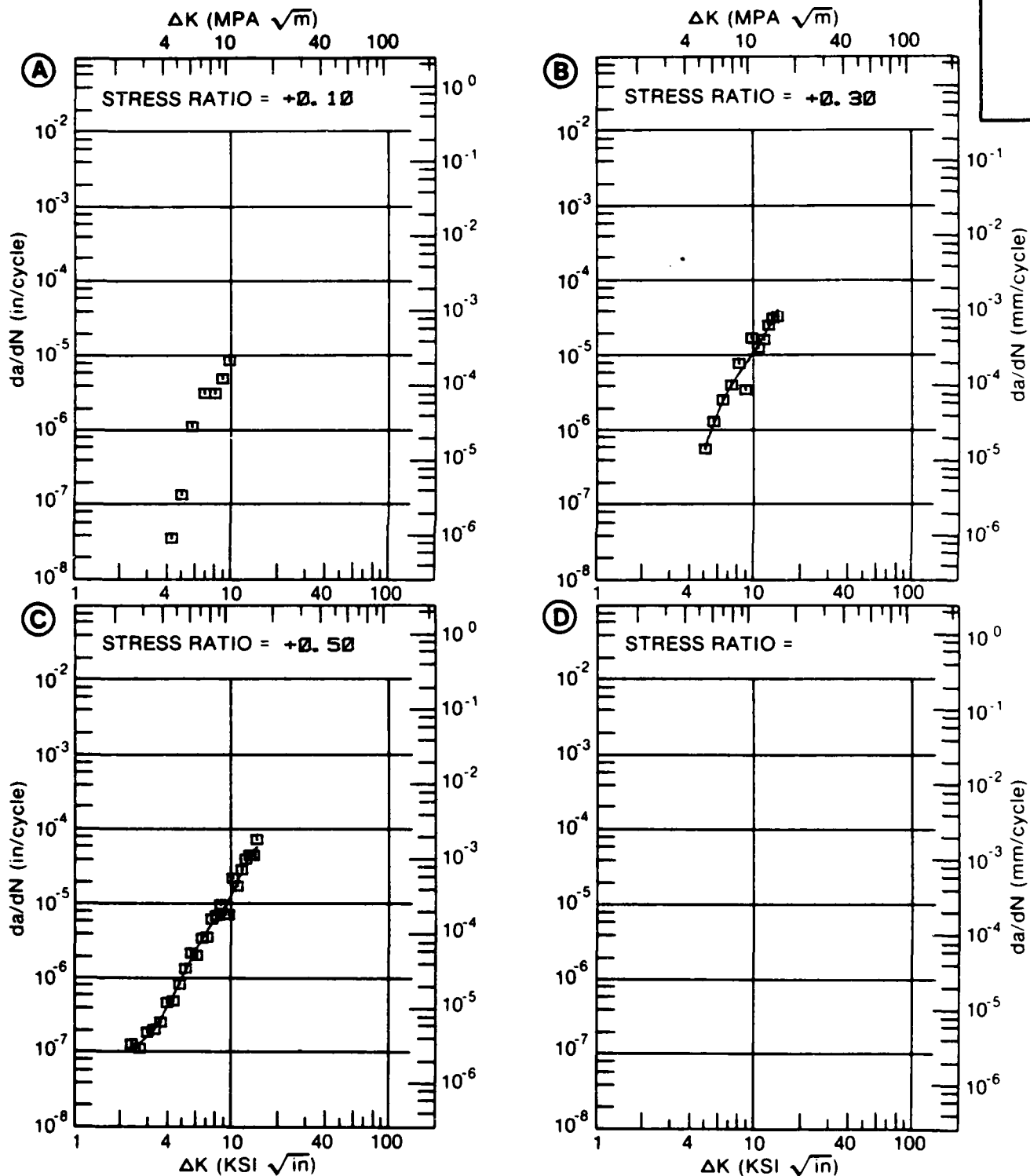


Figure 5.7.3.34

TABLE 7.5.3.35

**FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR**

**DATA ASSOCIATED WITH FIGURE 7.5.3.35 INDICATING EFFECT  
OF STRESS RATIO**

MATERIAL: ALUMINUM		2024			
CONDITION: T62					
ENVIRONMENT: R. T. , S. T. W.					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		R=-0.25	R=+0.10	R=+0.30	R=+0.50
DELTA K MIN	A: 5.00	.862			
	B: 4.32		.573		
	C: 3.26			.385	
	D: 2.24				.0837
	2.50				.151
	3.00				.166
	3.50			.482	.294
	4.00			.665	.721
	5.00	.862	.696	1.24	2.83
	6.00	1.87	2.08	2.55	4.58
	7.00	3.43	3.91	4.96	6.03
	8.00	3.48	4.86	8.66	9.09
	9.00	3.55	5.26	13.1	15.6
	10.00	4.87	5.87	17.0	25.7
	13.00	23.6	17.0	29.2	
	16.00			92.6	
DELTA K MAX	A: 15.39	43.8			
	B: 15.29		22.2		
	C: 16.37			114.	
	D: 11.22				39.8
ROOT MEAN SQUARE		13.05	11.67	23.59	19.16
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25				
SUMMARY	1.25-2.0	1	1	1	1
(NP/NA)	>2.0				



CONDITION/HT: T62  
 FORM: 0.13" TH SHEET  
 SPECIMEN TYPE: CCP  
 ORIENTATION: T-L  
 FREQUENCY: 1.00 HZ  
 ENVIRONMENT: R. T., S. T. W.

YIELD STRENGTH: 58.2 KSI  
 ULT. STRENGTH: 73.5 KSI  
 SPECIMEN THK: 0.125"  
 SPECIMEN WIDTH: 6.000"  
 REFERENCES GD004

ALUM.  
 ALLOY

2024

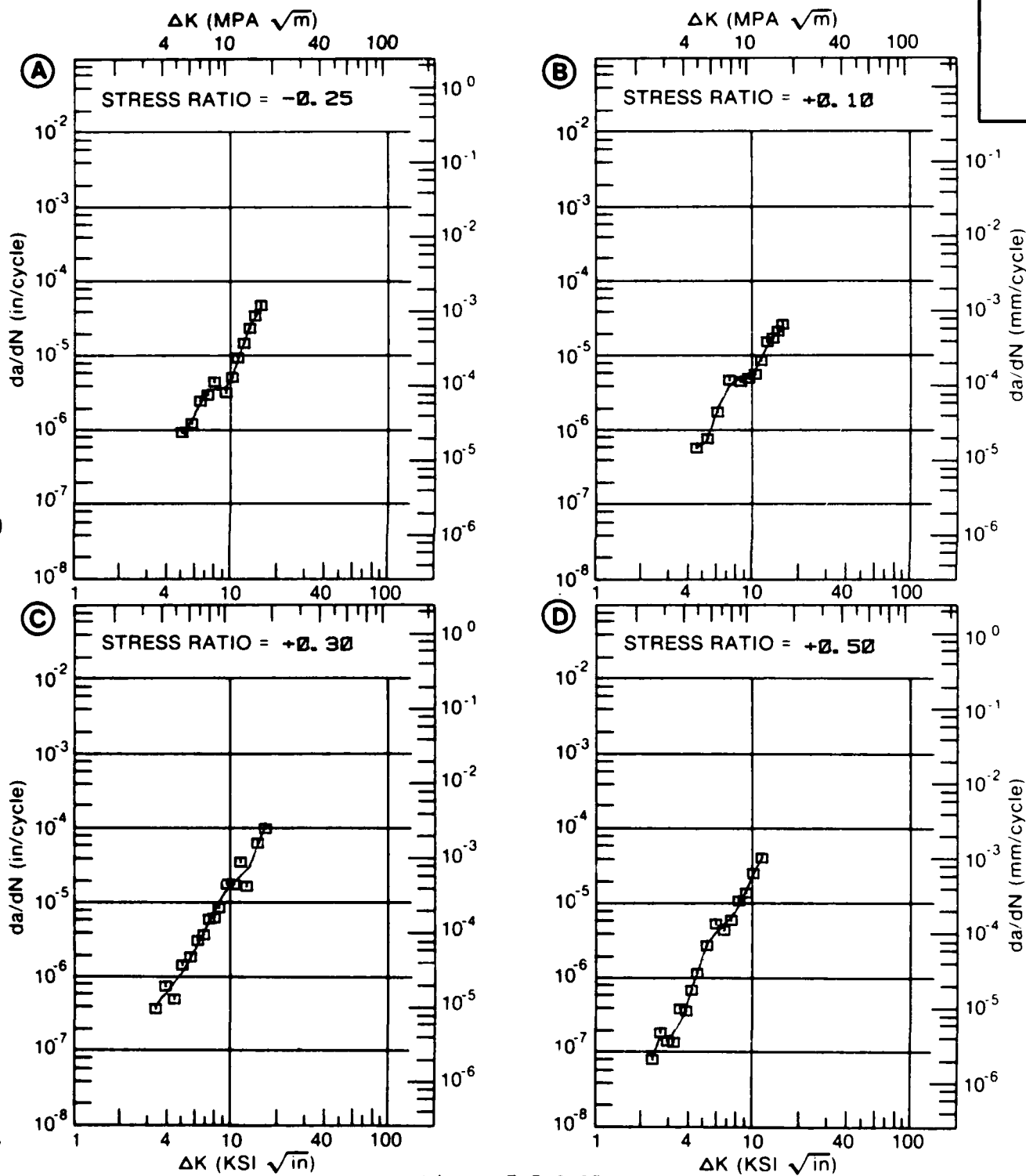


Figure 7.5.3.35

TABLE 7.5.3.36

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.5.3.36 INDICATING EFFECT  
OF STRESS RATIO

MATERIAL: ALUMINUM 2024  
CONDITION: T81  
ENVIRONMENT: R. T. , LAB AIR

DELTA K  
(KSI\*IN\*\*1/2)

DA/DN (10\*\*-6 IN. /CYCLE)

A

B

C

D

R=+0.05

DELTA K	A:	10.00	:	8.08
MIN	B:		:	
	C:		:	
	D:		:	
		13.00	:	13.3
		16.00	:	26.8
		20.00	:	68.1
		25.00	:	183.
		30.00	:	392.
		35.00	:	684.

DELTA K	A:	36.74	:	795.
MAX	B:		:	
	C:		:	
	D:		:	

ROOT MEAN SQUARE 16.24  
PERCENT ERROR

LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25 4  
SUMMARY 1.25-2.0  
(NP/NA) >2.0

CONDITION/HT: T81  
 FORM: 0.03- 0.04" TH SHEET  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T  
 FREQUENCY: 2.00 HZ  
 ENVIRONMENT: R. T., LAB AIR

YIELD STRENGTH: 64.4 KSI  
 ULT. STRENGTH: 70.5 KSI  
 SPECIMEN THK: 0.032- 0.040"  
 SPECIMEN WIDTH: 6.000- 9.700"  
 REFERENCES: 86734

ALUM.  
 ALLOY

2024

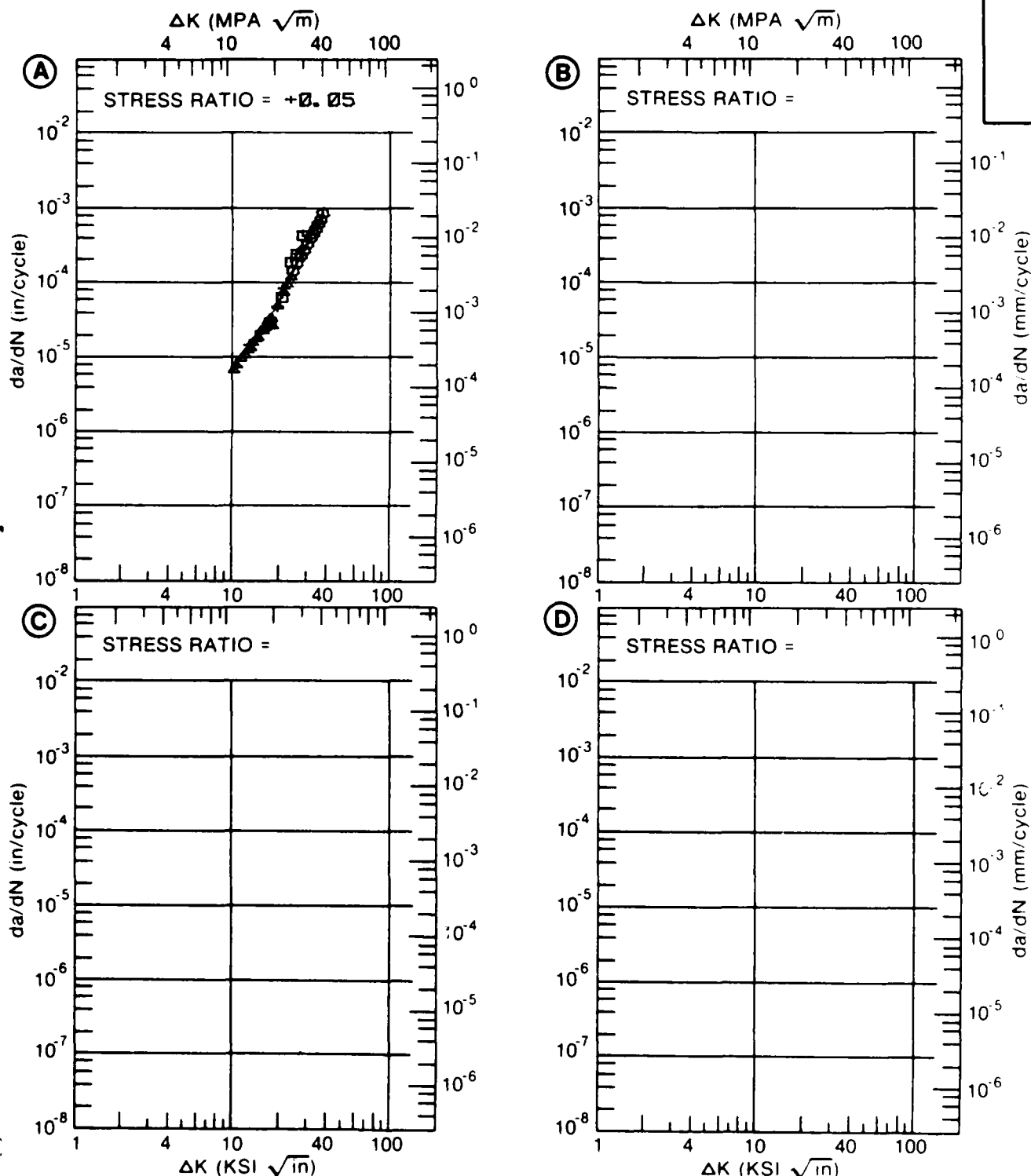


Figure 7.5.3.36

TABLE 7.5.3.37

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.5.3.37 INDICATING EFFECT

OF ENVIRONMENT

MATERIAL: ALUMINUM 2024  
CONDITION: T81

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		E= R. T. LAB AIR			
DELTA K MIN	A:	10.39	12.0		
	B:				
	C:				
	D:				
		13.00	28.7		
		16.00	58.8		
		20.00	106.		
DELTA K MAX	A:	21.09	117.		
	B:				
	C:				
	D:				

ROOT MEAN SQUARE 3.94  
PERCENT ERROR

LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25  
SUMMARY 1.25-2.0  
(NP/NA) >2.0

CONDITION/HT: T81  
 FORM: 0.07" TH SHEET  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T  
 STRESS RATIO: +0.40  
 FREQUENCY: 2.00 HZ

YIELD STRENGTH: 64.4 KSI  
 ULT. STRENGTH: 70.5 KSI  
 SPECIMEN THK: 0.065"  
 SPECIMEN WIDTH: 4.000"  
 REFERENCES: 86734

ALUM.  
 ALLOY

2024

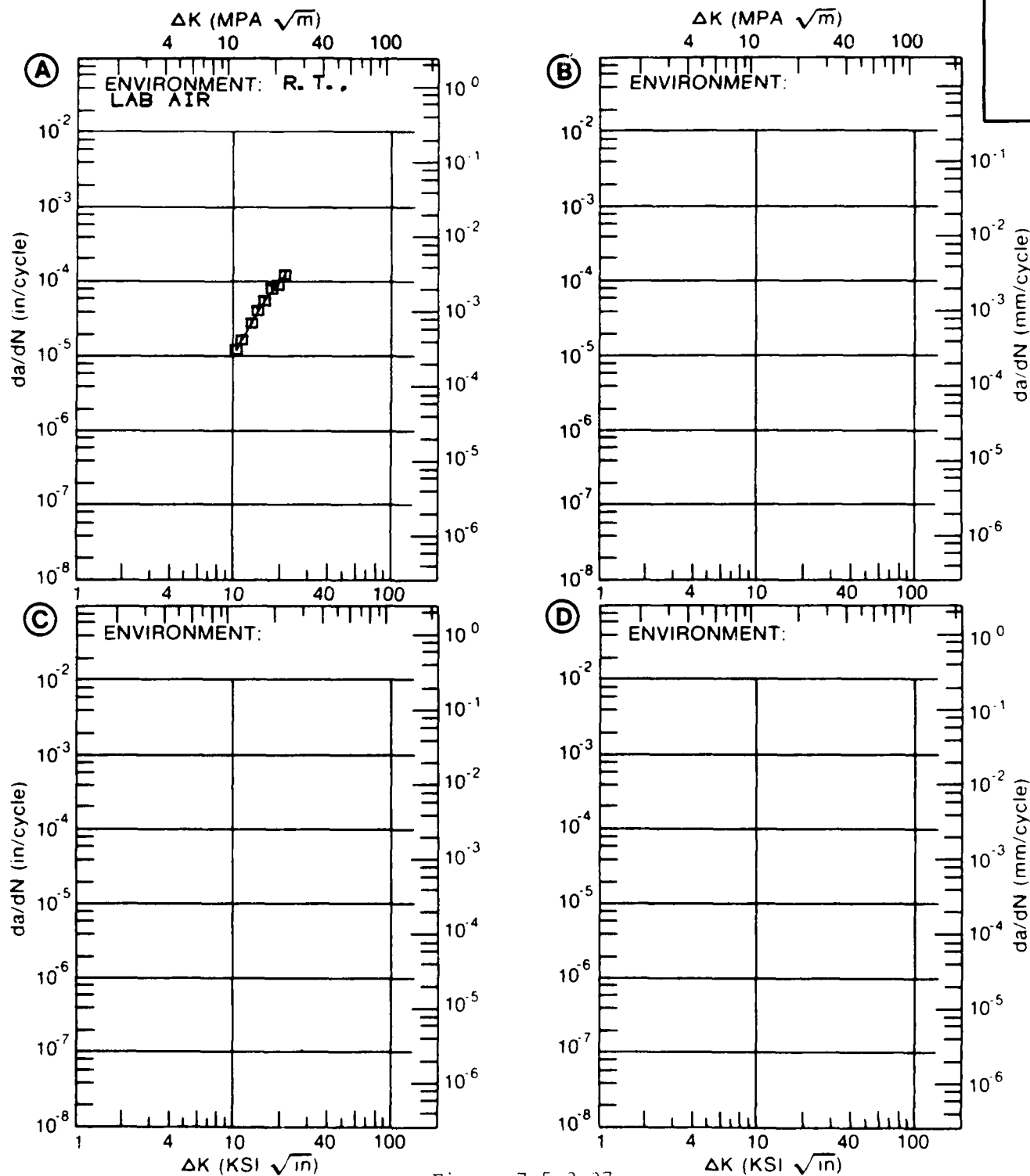


Figure 7.5.3.37

TABLE 7.5.3.38

**FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR**

**DATA ASSOCIATED WITH FIGURE 7.5.3.38 INDICATING EFFECT  
OF STRESS RATIO**

MATERIAL: ALUMINUM		2024			
CONDITION: T81					
ENVIRONMENT: R. T. , L. H. A.					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		R=+0. 08	R=+0. 30	R=+0. 50	
A:	5. 82	1. 16			
DELTA K B:	6. 20		1. 81		
MIN C:	3. 21			. 125	
D:					
	3. 50			. 299	
	4. 00			. 533	
	5. 00			1. 26	
	6. 00	1. 28		2. 46	
	7. 00	1. 98	3. 00	4. 31	
	8. 00	2. 77	4. 67	7. 11	
	9. 00	3. 68	6. 51	11. 3	
	10. 00	4. 78	8. 64	17. 6	
	13. 00	10. 3	19. 9	61. 3	
	16. 00	23. 4	54. 3	202.	
	20. 00	71. 8	193.	686.	
	25. 00	261.	355.		
	30. 00	802.			
A:	32. 00	1197.			
DELTA K B:	25. 06		355.		
MAX C:	22. 07			2750.	
D:					
ROOT MEAN SQUARE		11. 07	21. 88	19. 67	
PERCENT ERROR					
LIFE	0. 0-0. 5				
PREDICTION	0. 5-0. 8				
RATIO	0. 8-1. 25		2	1	
SUMMARY	1. 25-2. 0	2		1	
(NP/NA)	>2. 0				

CONDITION/HT: T81  
 FORM: 0.10" TH SHEET  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T  
 FREQUENCY: 6.00 HZ  
 ENVIRONMENT: R. T. . L. H. A.

YIELD STRENGTH:  
 ULT. STRENGTH:  
 SPECIMEN THK: 0.097- 0.101"  
 SPECIMEN WIDTH: 23.660- 23.820"  
 REFERENCES: 86575

ALUM.  
 ALLOY

2024

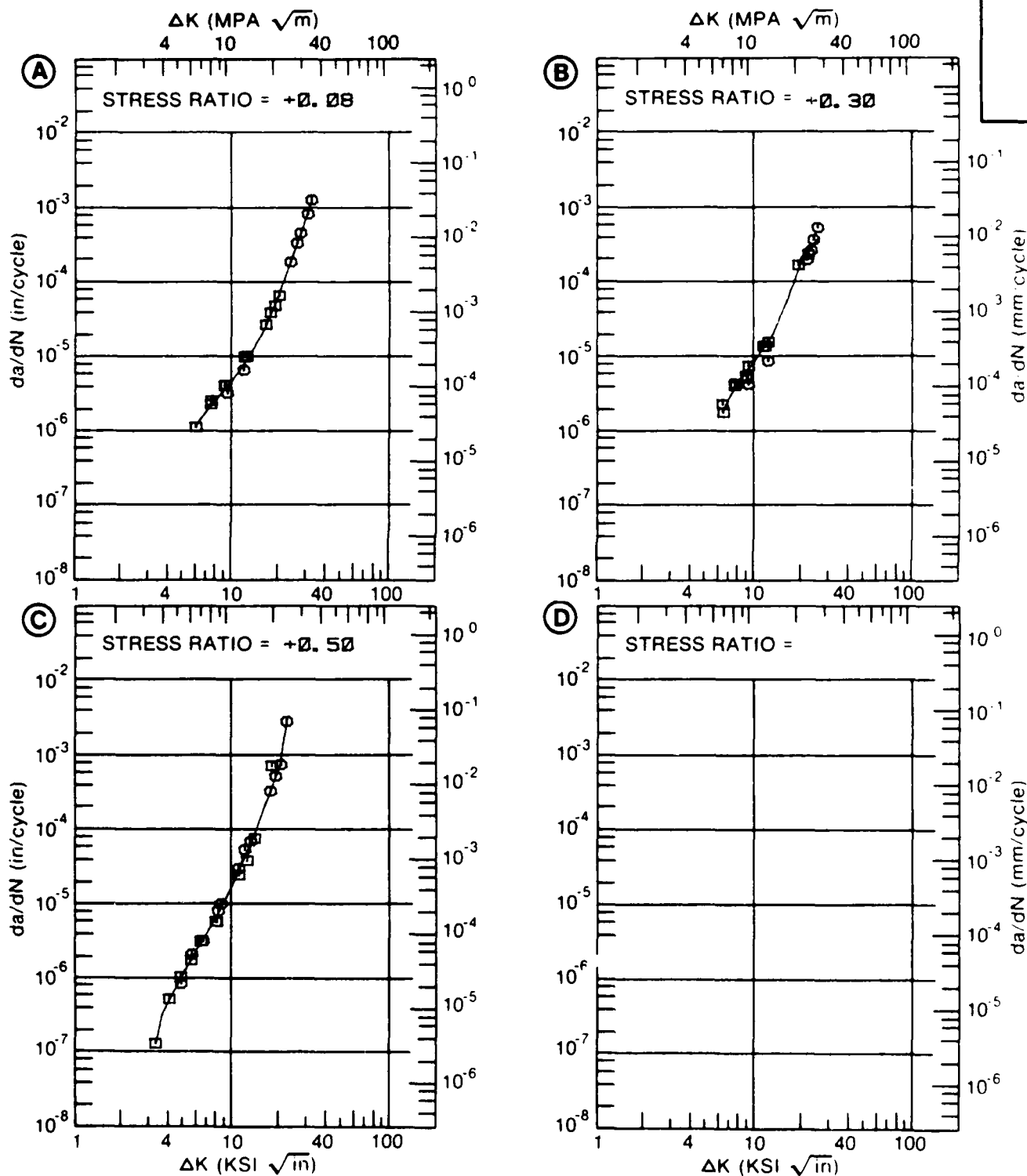


Figure 7.5.3.38

TABLE 7.5.3.39

**FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR**

**DATA ASSOCIATED WITH FIGURE 7.5.3.39 INDICATING EFFECT**

**OF ENVIRONMENT**

**MATERIAL: ALUMINUM  
CONDITION: T81**

**2024**

**DELTA K  
(KSI\*IN\*\*1/2)**

**DA/DN (10\*\*-6 IN./CYCLE)**

**A**

**B**

**C**

**D**

**E= R. T.**

**E= R. T.**

**E= R. T.**

**L. H. A.**

**J. P. 4**

**S. T. W.**

**DELTA K A: 6.04 : .769**  
**MIN B: 6.04 : 1.42**  
**C: 6.24 : 1.87**  
**D:**

7.00 :	1.71	2.47	2.68
8.00 :	2.93	3.85	4.04
9.00 :	4.29	5.53	5.78
10.00 :	5.82	7.53	8.00
13.00 :	12.9	16.1	18.6
16.00 :	29.0	31.1	38.8
20.00 :	79.2	72.0	94.0
25.00 :	230.	206.	260.
30.00 :	489.	602.	

**DELTA K A: 34.01 : 710.**  
**MAX B: 34.23 : 1510.**  
**C: 29.89 : 663.**  
**D:**

**ROOT MEAN SQUARE  
PERCENT ERROR**

**22.88**

**18.36**

**17.00**

**LIFE 0.0-0.5**  
**PREDICTION 0.5-0.8**  
**RATIO 0.8-1.25**  
**SUMMARY 1.25-2.0**  
**(NP/NA) >2.0**

**1**  
**1**

**1**  
**1**

**1**  
**1**



CONDITION/HT: T81  
 FORM: 0.10" TH SHEET  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T  
 STRESS RATIO: +0.08  
 FREQUENCY: 1.00 HZ

YIELD STRENGTH:  
 ULT. STRENGTH:  
 SPECIMEN THK: 0.098- 0.101"  
 SPECIMEN WIDTH: 23.660- 23.820"  
 REFERENCES: 86575

ALUM.  
 ALLOY

2024

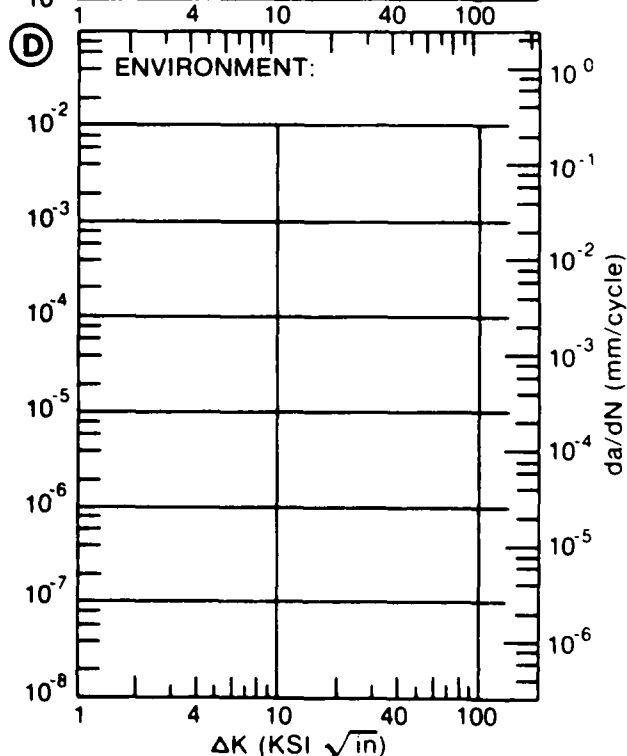
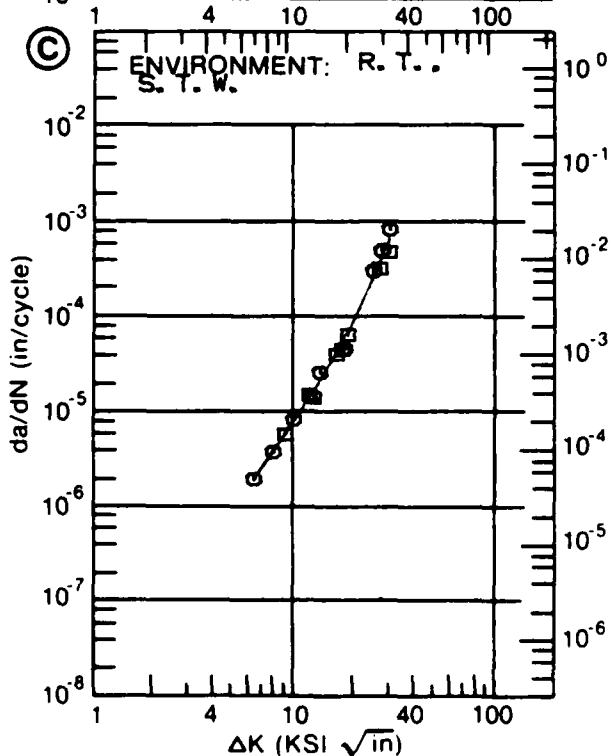
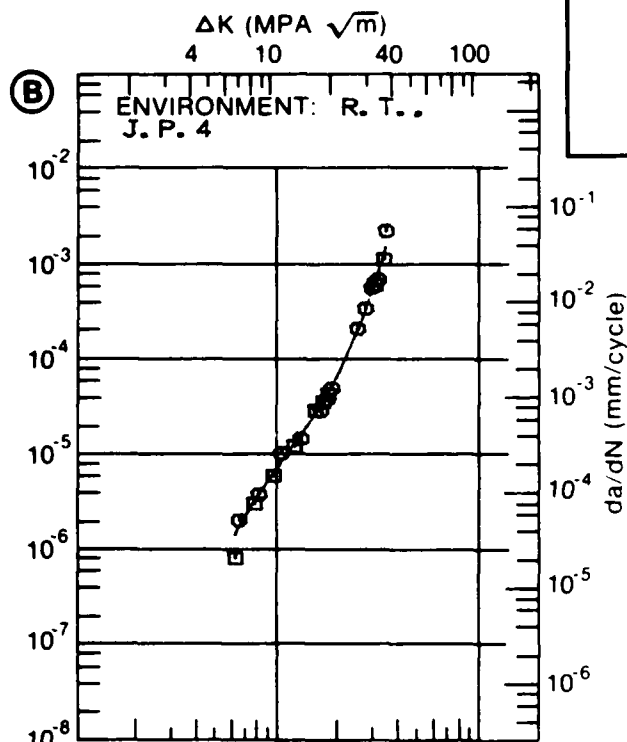
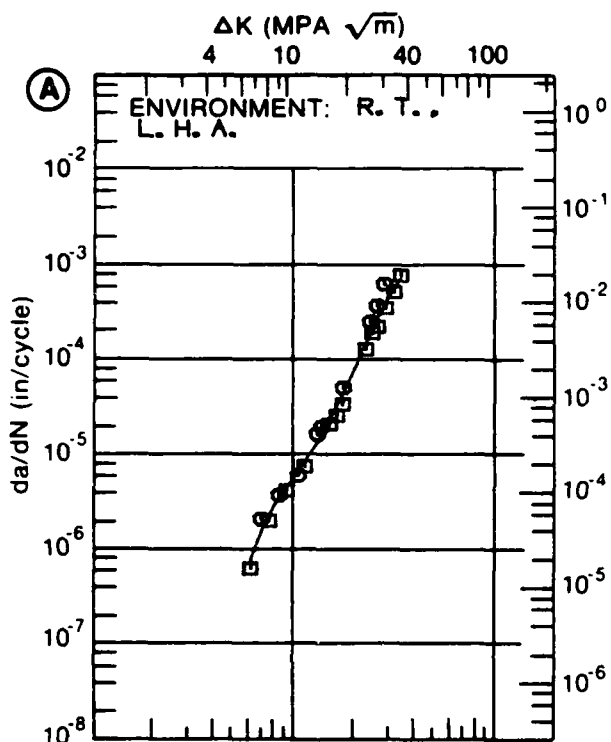


Figure 7.5.3.39

TABLE 7.5.3.40

**FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR**

**DATA ASSOCIATED WITH FIGURE 7.5.3.40 INDICATING EFFECT  
OF ENVIRONMENT**

MATERIAL: ALUMINUM		2024				
CONDITION: TB1						
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)				
		A	B	C	D	
		E= R. T.	E= R. T.			
		L. H. A.	S. T. W.			
		6HZ	1HZ			
DELTA K MIN	A:	6.20	1.20			
	B:	5.70	.75/			
	C:					
	D:					
		6.00		1.03		
		7.00	1.80	2.18		
		8.00	2.69	3.57		
		9.00	3.56	5.11		
		10.00	4.34	6.83		
		13.00	8.21	14.3		
DELTA K MAX		16.00	20.6	30.7		
		20.00	74.0	97.9		
		25.00	303.	456.		
		30.00	997.	979.		
	A:	31.13	1271.			
	B:	31.22	983.			
	C:					
	D:					
	ROOT MEAN SQUARE		23.21	14.91		
	PERCENT ERROR					
LIFE	0.0-0.5					
PREDICTION	0.5-0.8					
RATIO	0.8-1.25	1	2			
SUMMARY	1.25-2.0	1				
(NP/NA)	>2.0					

CONDITION/HT: T81  
 FORM: 0.10" TH SHEET  
 SPECIMEN TYPE: CCP  
 ORIENTATION: T-L  
 STRESS RATIO: +0.08  
 FREQUENCY:

YIELD STRENGTH: 67.0 KSI  
 ULT. STRENGTH: 73.0 KSI  
 SPECIMEN THK: 0.099- 0.100"  
 SPECIMEN WIDTH: 23.810- 23.910"  
 REFERENCES: 86575

ALUM.  
 ALLOY

2024

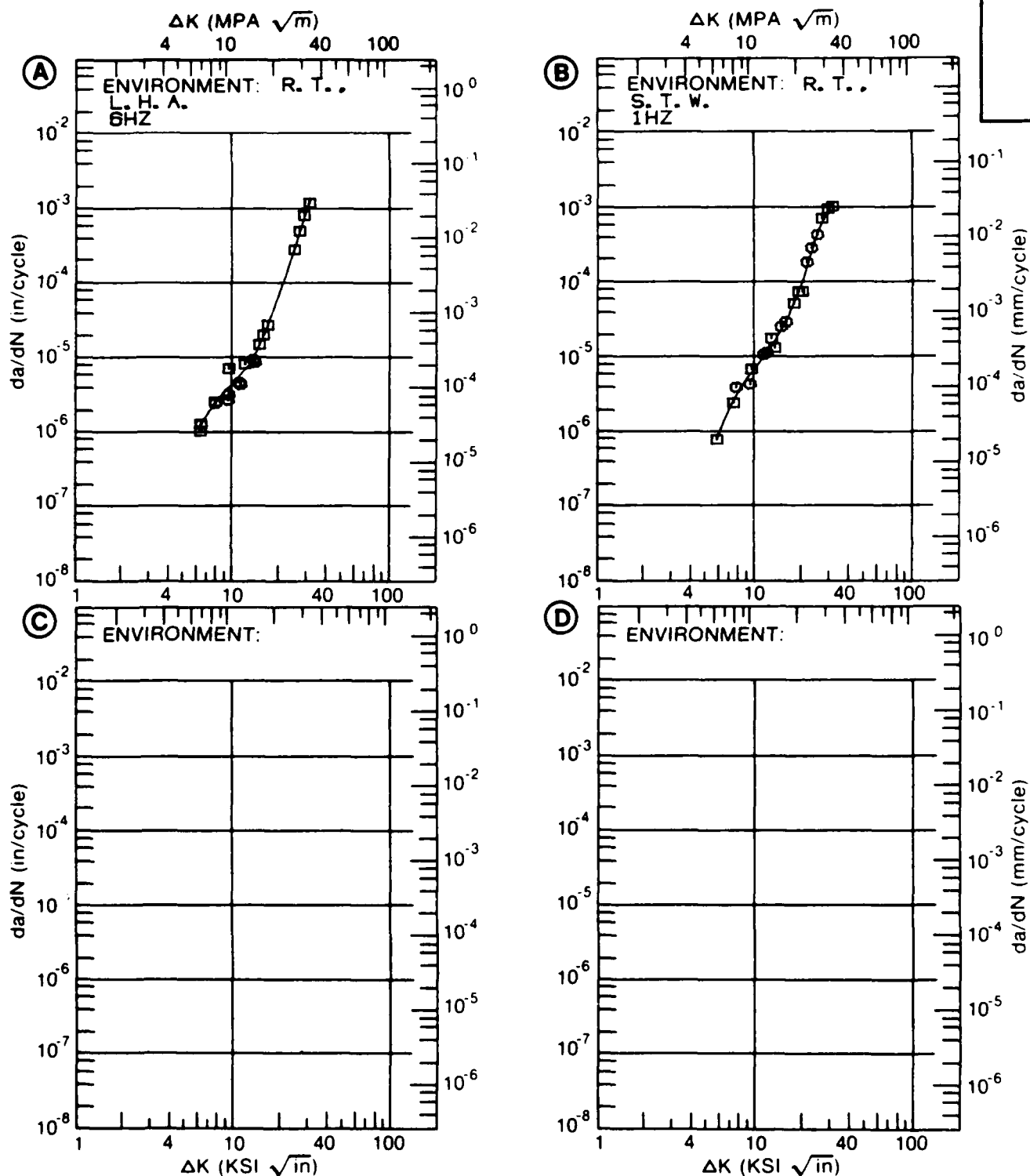


Figure 7.5.3.40

TABLE 7.5.3.41

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.5.3.41 INDICATING EFFECT

## OF STRESS RATIO

MATERIAL: ALUMINUM 2024  
 CONDITION: T81  
 ENVIRONMENT: R. T. , DRY AIR

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A R=-0.25	B R=+0.10	C R=+0.30	D R=+0.50
DELTA K MIN	A: 5.19	.542			
	B: 5.48		1.57		
	C: 5.14			1.02	
	D: 2.94				.151
	3.00				.182
	3.50				.496
	4.00				.777
	5.00				1.26
	6.00	.892	1.61	1.89	2.21
	7.00	1.44	2.01	3.31	3.95
	8.00	2.15	2.79	5.16	6.64
	9.00	3.05	3.99	7.45	10.2
	10.00	4.17	5.65	10.2	14.8
	13.00	9.35	13.2	21.1	37.0
	16.00	18.7	24.7	36.7	84.5
	20.00	46.1	52.2	66.4	288.
	25.00		138.		
DELTA K MAX	A: 24.54	146.			
	B: 26.90		204.		
	C: 21.75			83.4	
	D: 21.91				556.
ROOT MEAN SQUARE		10.78	20.94	24.98	24.30
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25		1	1	
SUMMARY	1.25-2.0	1			1
(NP/NA)	>2.0				

CONDITION/HT: T81  
 FORM: 0.13" TH SHEET  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T  
 FREQUENCY: 6.00 HZ  
 ENVIRONMENT: R. T., DRY AIR

YIELD STRENGTH: 65.3 KSI  
 ULT. STRENGTH: 70.9 KSI  
 SPECIMEN THK: 0.125"  
 SPECIMEN WIDTH: 6.000"  
 REFERENCES GD004

ALUM.  
 ALLOY

2024

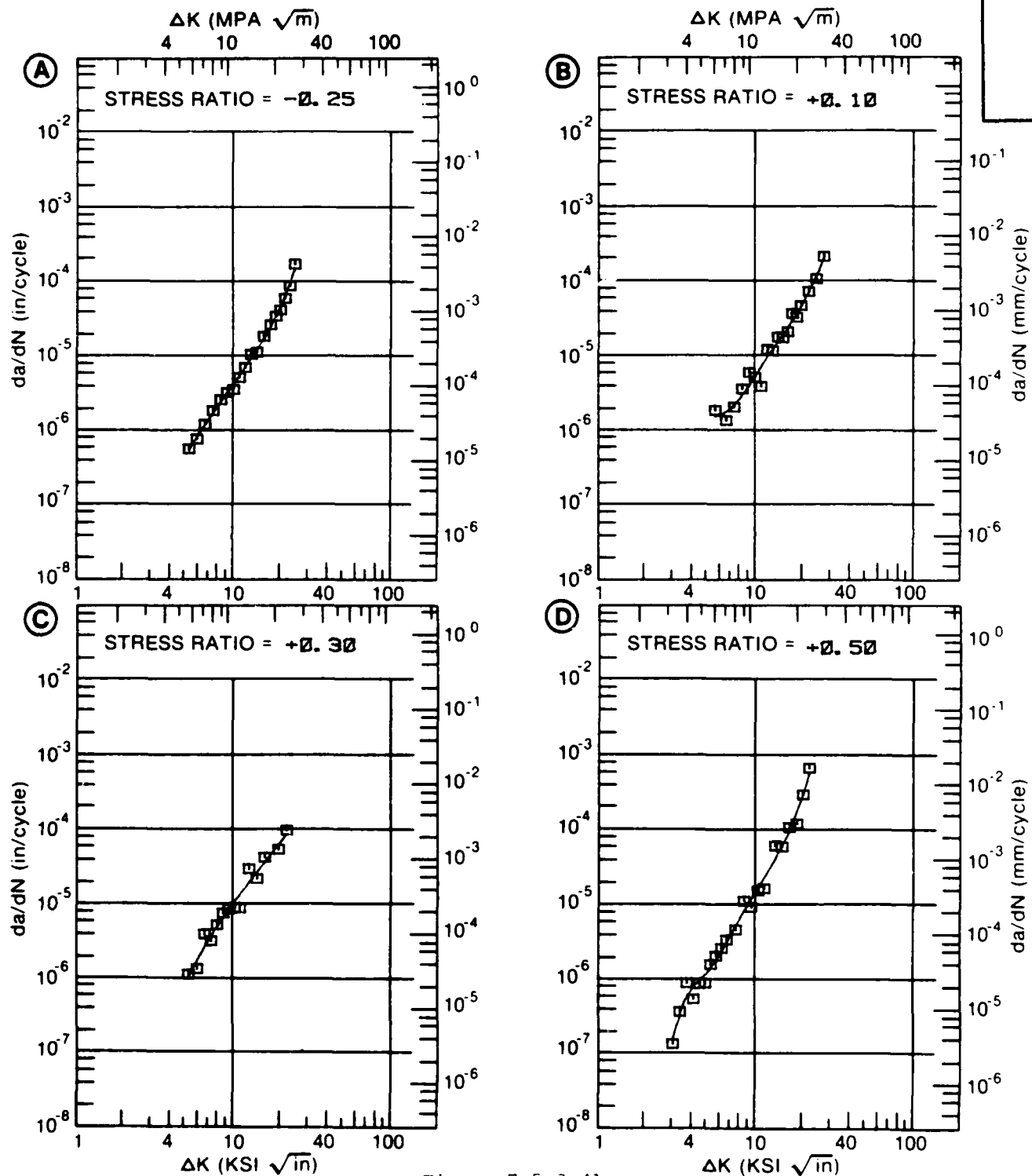


Figure 7.5.3.41

TABLE 7.5.3.42

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.5.3.42 INDICATING EFFECT

OF STRESS RATIO

MATERIAL: ALUMINUM		2024			
CONDITION: T81					
ENVIRONMENT: R. T. , H. H. A.					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		R=-0.25	R=+0.10	R=+0.30	R=+0.50
A:	4.56	.206			
DELTA K B:	5.09		.783		
MIN C:	3.52			.206	
D:	3.89				.612
	4.00			.464	.685
	5.00	.289		1.04	1.50
	6.00	.675	1.25	1.99	2.76
	7.00	1.46	2.17	4.25	4.72
	8.00	2.70	3.62	8.07	7.60
	9.00	4.37	5.64	12.2	11.7
	10.00	6.45	8.15	15.2	17.2
	13.00	15.0	18.0	22.9	46.7
	16.00	26.9	32.4		115.
	20.00	51.3	70.1		
	25.00	118.	216.		
	30.00	302.	572.		
A:	32.56	344.			
DELTA K B:	32.48		682.		
MAX C:	14.10			29.1	
D:	19.90				360.
ROOT MEAN SQUARE		14.71	13.39	25.78	15.27
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25				1
SUMMARY	1.25-2.0	1	1	1	
(NP/NA)	>2.0				

CONDITION/HT: T81  
 FORM: 0.13" TH SHEET  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T  
 FREQUENCY: 1.00 HZ  
 ENVIRONMENT: R. T., H. H. A.

YIELD STRENGTH: 65.3 KSI  
 ULT. STRENGTH: 70.9 KSI  
 SPECIMEN THK: 0.125"  
 SPECIMEN WIDTH: 6.000"  
 REFERENCES: G0004

ALUM.  
 ALLOY

2024

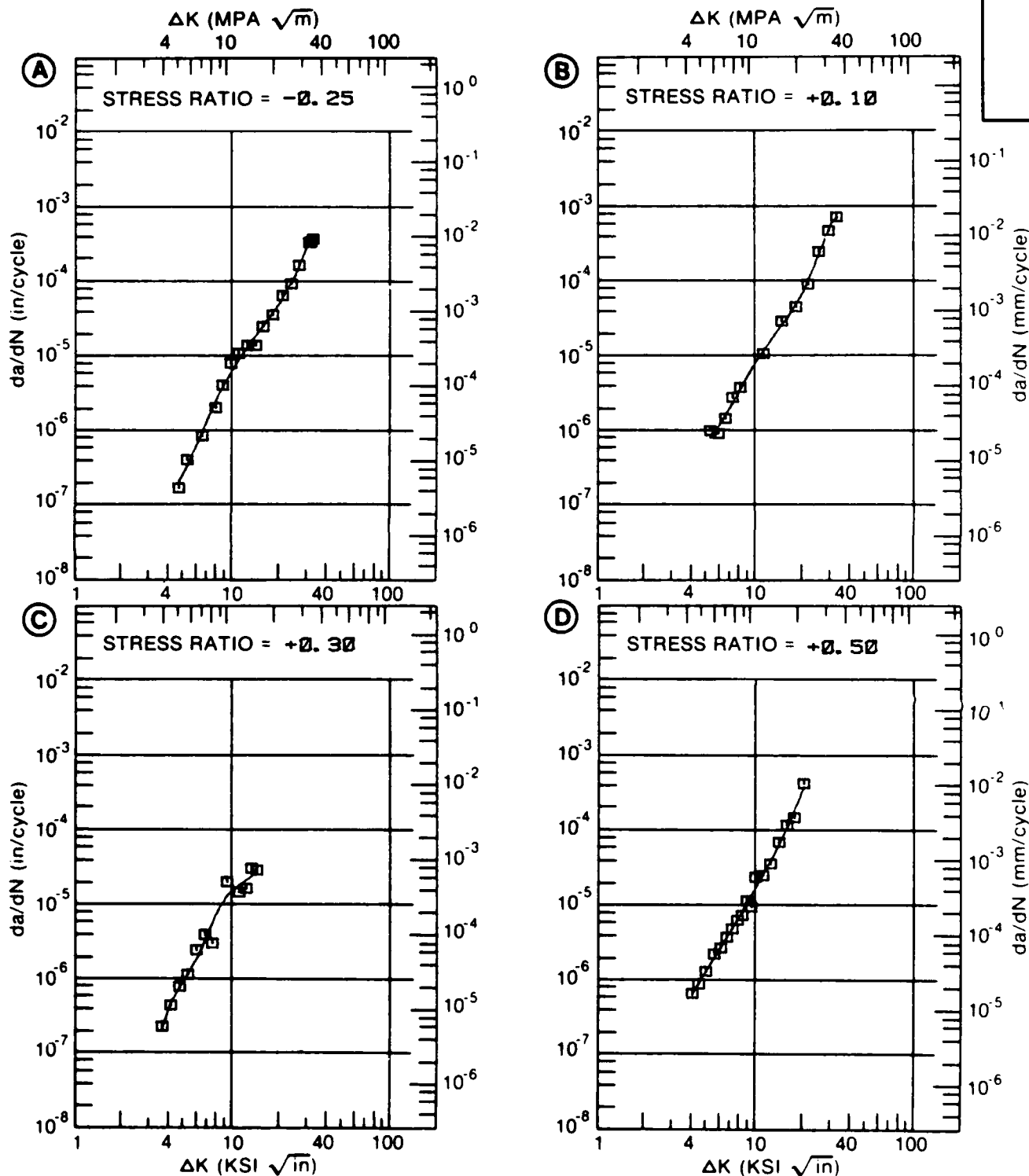


Figure 7.5.3.42

TABLE 7.5.3.43

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.5.3.43 INDICATING EFFECT  
OF STRESS RATIO

MATERIAL: ALUMINUM 2024  
CONDITION: T81  
ENVIRONMENT: R. T. , S. T. W.

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		R=-0.20	R=+0.10		
DELTA K MIN	A: 4.03	.309			
	B: 4.55		.196		
	C:				
	D:				
	5.00	.749	.365		
	6.00	1.56	1.04		
	7.00	2.87	2.19		
	8.00	4.82	3.82		
	9.00	7.56	5.86		
	10.00	11.2	8.25		
	13.00	29.2	16.7		
	16.00		26.4		
DELTA K MAX	A: 15.95	59.3			
	B: 18.76		36.2		
	C:				
	D:				
MEAN SQUARE		16.72	34.46		
PERCENT					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25				
SUMMARY	1.25-2.0	1	1		
(NP/NA)	>2.0		1		



CONDITION/HT: T81  
 FORM: 0.13" TH SHEET  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T  
 FREQUENCY: 1.00 HZ  
 ENVIRONMENT: R. T., S. T. W.

YIELD STRENGTH: 65.3 KSI  
 ULT. STRENGTH: 70.9 KSI  
 SPECIMEN THK: 0.125"  
 SPECIMEN WIDTH: 6.000"  
 REFERENCES: GD004

ALUM.  
ALLOY

2024

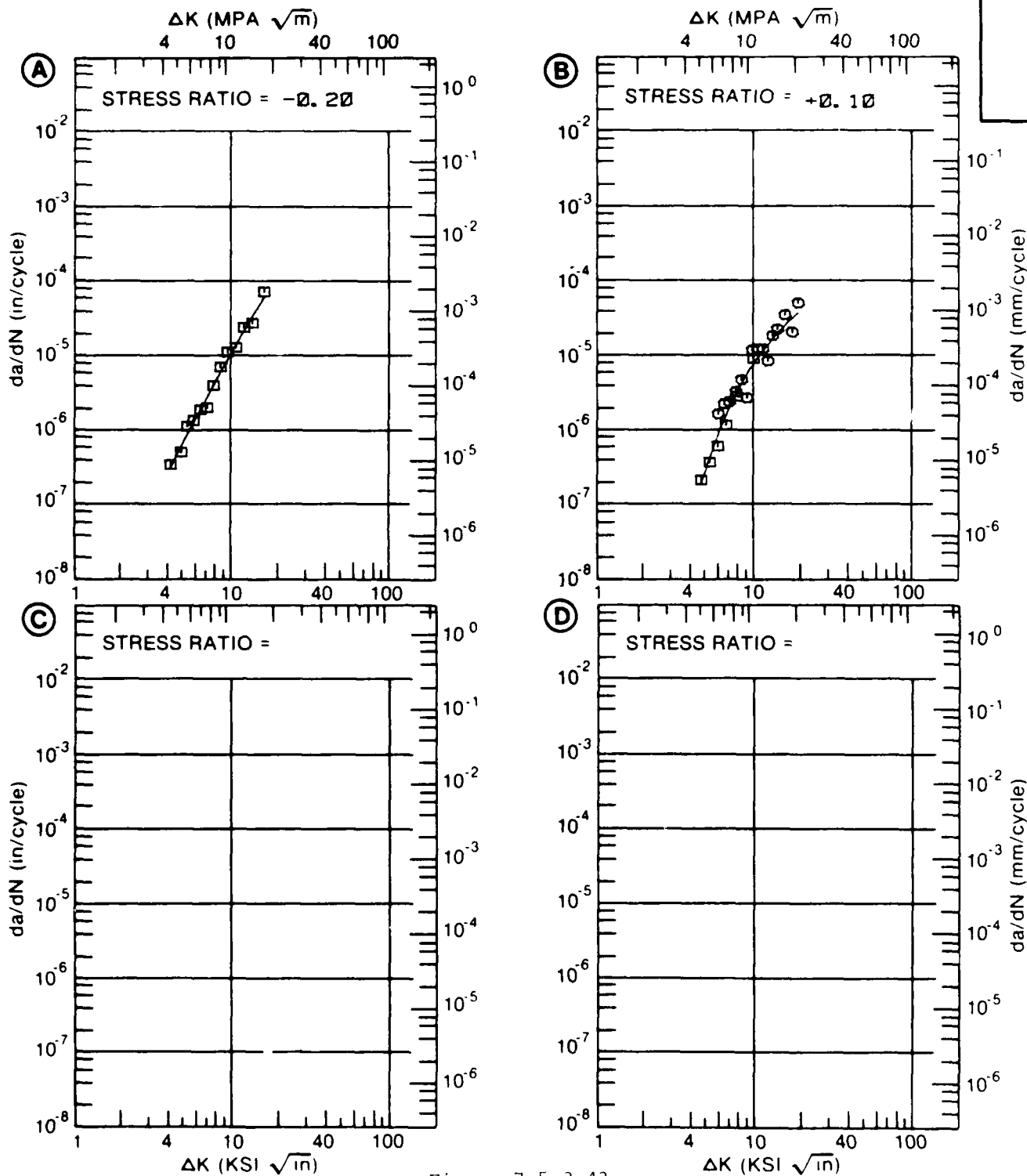


Figure 7.5.3.43

TABLE 7.5.3.44

**FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR**

**DATA ASSOCIATED WITH FIGURE 7.5.3.44 INDICATING EFFECT  
OF FREQUENCY**

MATERIAL: ALUMINUM		2024			
CONDITION: T81					
ENVIRONMENT: R. T. , H. H. A.					
DELTA K		DA/DN (10**-6 IN. /CYCLE)			
(KSI*IN**1/2)					
		A	B	C	D
		F(HZ)= 0.10 F(HZ)= 1.00			
DELTA K MIN	A:	5.09	1.14		
	B:	5.09	.785		
	C:				
	D:				
	6.00	3.88	1.25		
	7.00	9.64	2.17		
	8.00	18.3	3.61		
	9.00	29.8	5.63		
	10.00	43.9	8.15		
	13.00	107.	18.2		
	16.00	232.	32.3		
	20.00		69.4		
	25.00		220.		
	30.00		565.		
DELTA K MAX	A:	17.46	339.		
	B:	32.48	681.		
	C:				
	D:				
ROOT MEAN SQUARE		43.37	13.16		
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25				
SUMMARY	1.25-2.0	1	1		
(NP/NA)	>2.0				

CONDITION/HT: T81  
 FORM: 0.13" TH SHEET  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T  
 STRESS RATIO: +0.10  
 ENVIRONMENT: R. T. . H. H. A.

YIELD STRENGTH: 65.3 KSI  
 ULT. STRENGTH: 70.9 KSI  
 SPECIMEN THK: 0.125"  
 SPECIMEN WIDTH: 6.000"  
 REFERENCES: GD004

ALUM.  
 ALLOY

2024

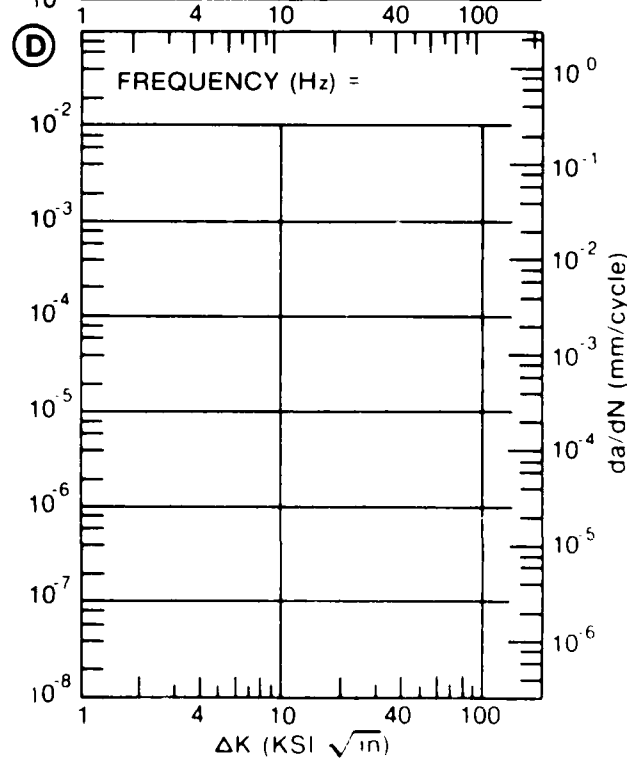
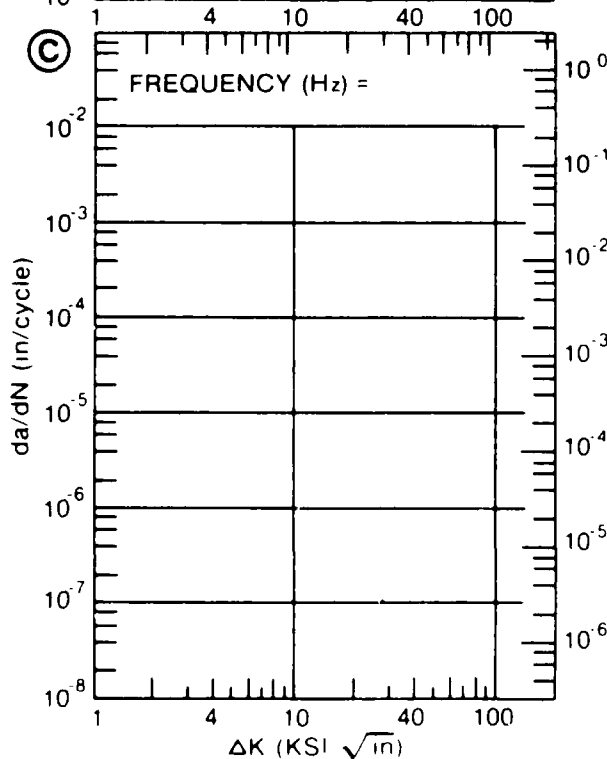
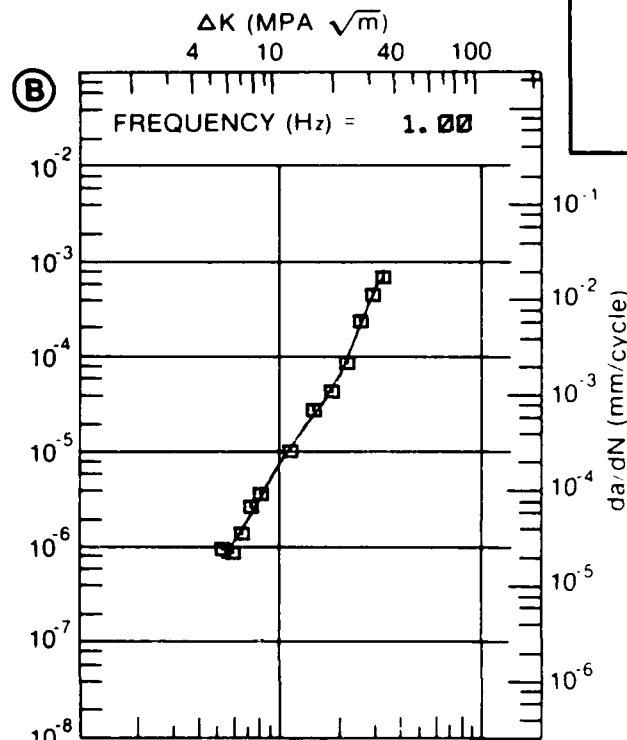
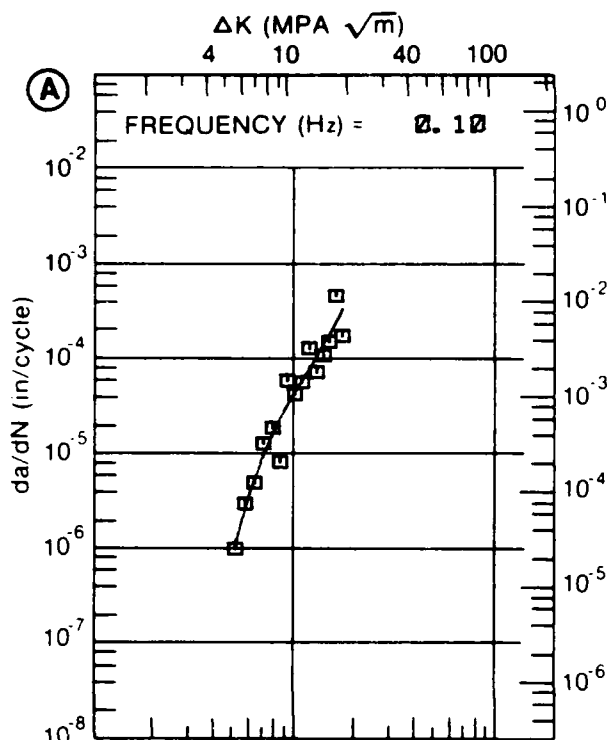


Figure 7.5.3.44

TABLE 7.5.3.45

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.5.3.45 INDICATING EFFECT

OF STRESS RATIO

MATERIAL: ALUMINUM 2024  
CONDITION: T81  
ENVIRONMENT: R. T. , DRY AIR

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		R=-0.25	R=+0.10		
DELTA K MIN	A:	5.21	.472		
	B:	5.26	.266		
	C:				
	D:				
	6.00	.653	.472		
	7.00	1.21	.831		
	8.00	1.98	1.41		
	9.00	2.85	2.31		
	10.00	3.81	3.51		
	13.00	7.82	9.93		
	16.00	16.1			
	20.00	48.3			
	25.00	209.			
	30.00	719.			
DELTA K MAX	A:	33.50	1351.		
	B:	13.58	18.7		
	C:				
	D:				
ROOT MEAN SQUARE		13.58	10.33		
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25				
SUMMARY	1.25-2.0	1	1		
(NP/NA)	>2.0				

CONDITION/HT: T81  
 FORM: 0.13" TH SHEET  
 SPECIMEN TYPE: CCP  
 ORIENTATION: T-L  
 FREQUENCY: 6.00 HZ  
 ENVIRONMENT: R. T., DRY AIR

YIELD STRENGTH: 65.8 KSI  
 ULT. STRENGTH: 73.1 KSI  
 SPECIMEN THK: 0.125"  
 SPECIMEN WIDTH: 6.000"  
 REFERENCES: GD004

ALUM.  
 ALLOY

2024

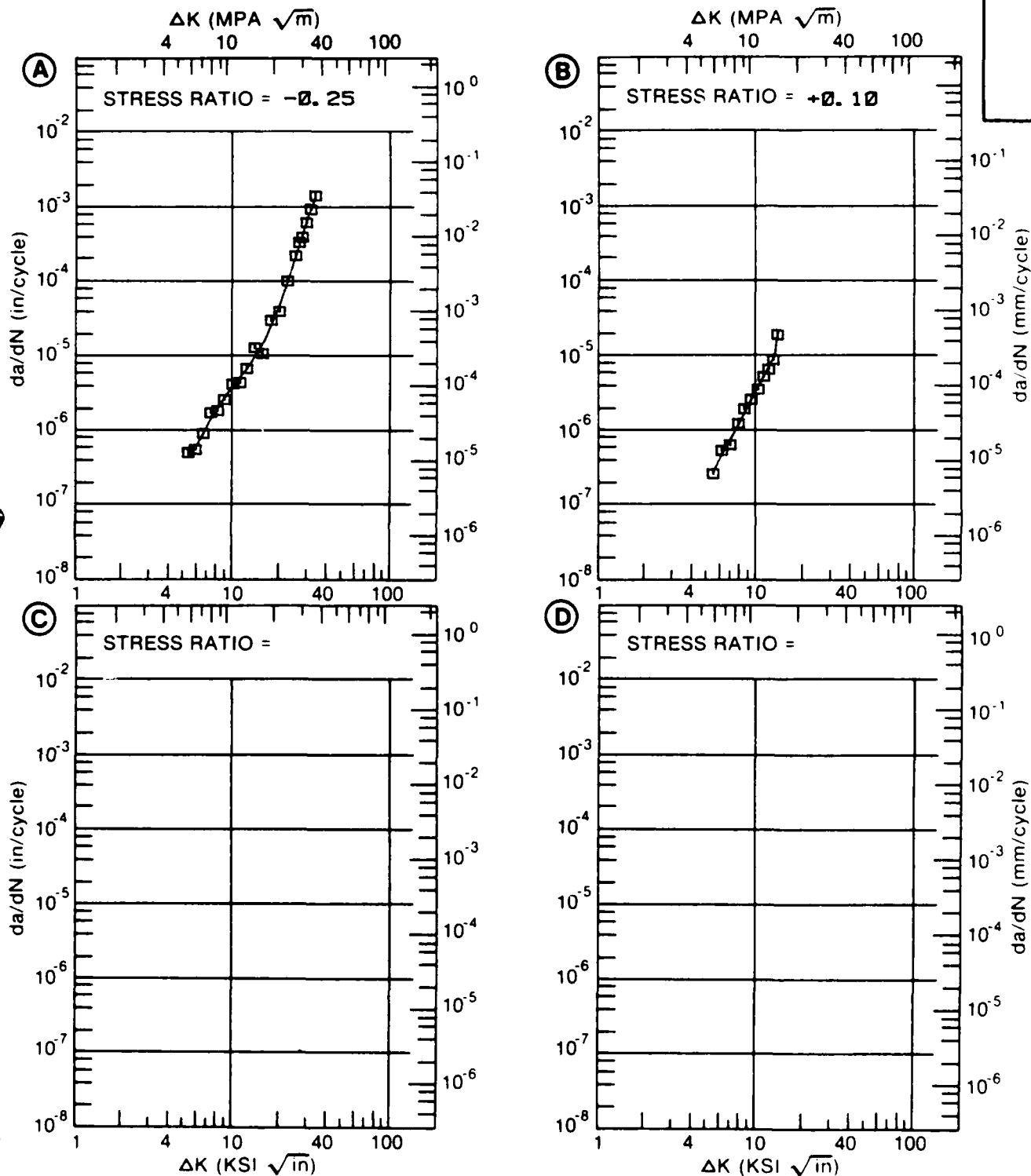


Figure 7.5.3.45

TABLE 7.5.3.46

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.5.3.46 INDICATING EFFECT

OF STRESS RATIO

MATERIAL: ALUMINUM		2024			
CONDITION: T81					
ENVIRONMENT: R. T. , H. H. A.					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		R=-0.25	R=+0.10	R=+0.50	
DELTA K MIN	A:	5.22	1.04		
	B:	5.53	.551		
	C:	2.80		.0957	
	D:				
		3.00		.175	
		3.50		.451	
		4.00		.756	
		5.00		1.44	
		6.00	1.53	.870	2.66
		7.00	2.13	1.86	4.78
		8.00	2.77	3.16	8.20
		9.00	3.62	4.66	13.6
		10.00	4.89	6.37	22.2
		13.00	13.8	14.4	90.5
		16.00	32.8	35.8	283.
		20.00	64.7	129.	
		25.00		435.	
DELTA K MAX	A:	23.07	121.		
	B:	28.46	634.		
	C:	18.14		467.	
	D:				
ROOT MEAN SQUARE		21.79	13.25	14.02	
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25				
SUMMARY	1.25-2.0	1	1	1	
(NP/NA)	>2.0				

CONDITION/HT: T81  
 FORM: 0.13" TH SHEET  
 SPECIMEN TYPE: CCP  
 ORIENTATION: T-L  
 FREQUENCY: 1.00 HZ  
 ENVIRONMENT: R. T., H. H. A.

YIELD STRENGTH: 65.8 KSI  
 ULT. STRENGTH: 73.1 KSI  
 SPECIMEN THK: 0.125"  
 SPECIMEN WIDTH: 6.000"  
 REFERENCES GD004

ALUM.  
 ALLOY

2024

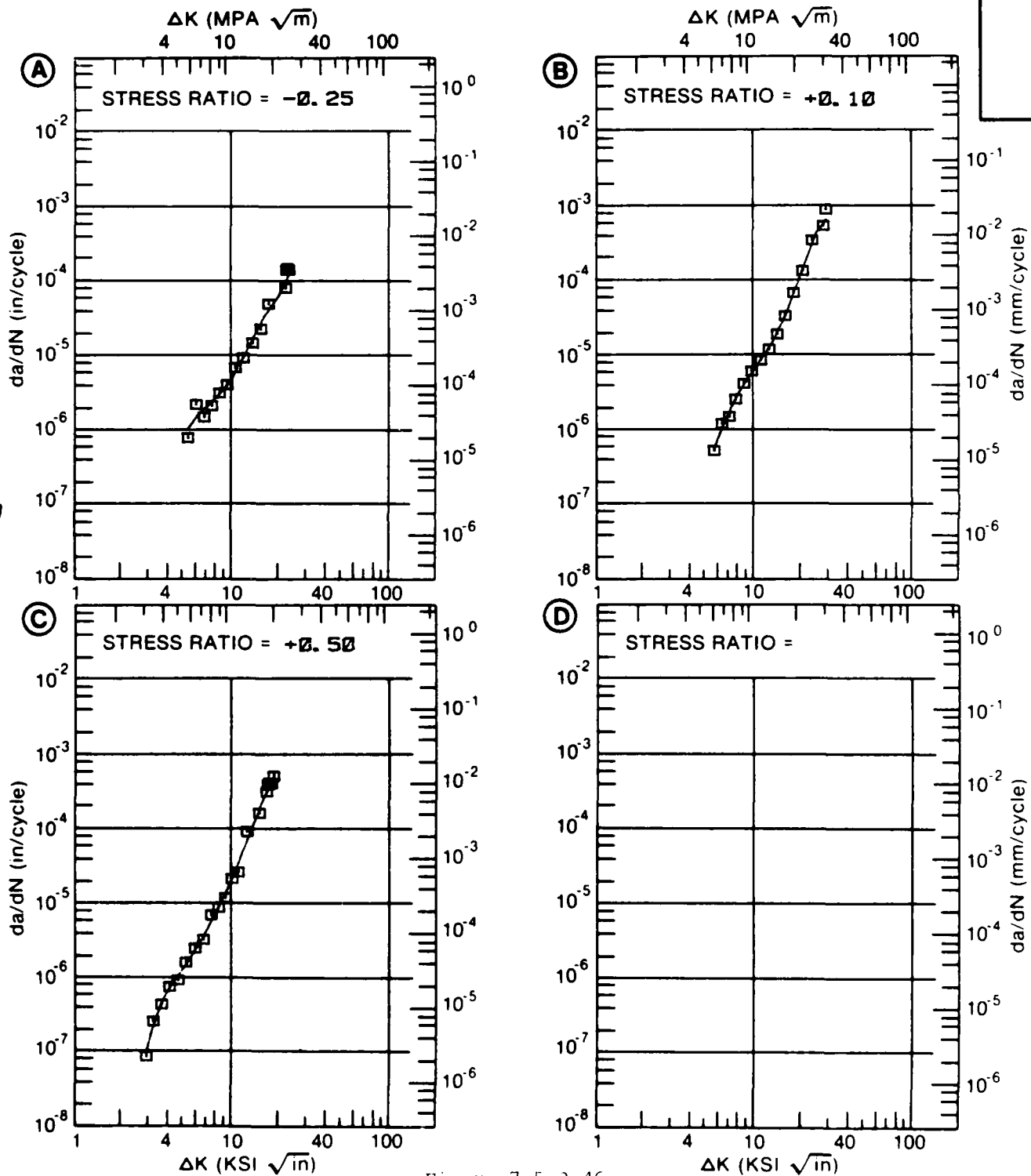


Figure 7.5.3.46

TABLE 7.5.3.47

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.5.3.47 INDICATING EFFECT  
OF STRESS RATIO

MATERIAL: ALUMINUM		2024			
CONDITION: TB1					
ENVIRONMENT: R. T. , S. T. W.					
DELTA K		DA/DN (10**-6 IN. /CYCLE)			
(KSI*IN**1/2)					
		A	B	C	D
		R=+0.10	R=+0.30		
A:	4.03	.094			
DELTA K B:	7				
MIN C:					
D:					
	5.00	.395			
	6.00	1.03			
	7.00	2.03			
	8.00	3.38			
	9.00	5.12			
	10.00	7.27			
	13.00	17.3			
	16.00	37.2			
	20.00	101.			
A:	20.39	111.			
DELTA K B:					
MAX C:					
D:					
ROOT MEAN SQUARE		34.62	0.00		
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25	1			
SUMMARY	1.25-2.0				
(NP/NA)	>2.0	1			



CONDITION/HT: T81  
 FORM: 0.13" TH SHEET  
 SPECIMEN TYPE: CCP  
 ORIENTATION: T-L  
 FREQUENCY: 1.00 HZ  
 ENVIRONMENT: R. T., S. T. W.

YIELD STRENGTH: 65.8 KSI  
 ULT. STRENGTH: 73.1 KSI  
 SPECIMEN THK: 0.125"  
 SPECIMEN WIDTH: 6.000"  
 REFERENCES: GD004

ALUM.  
 ALLOY

2024

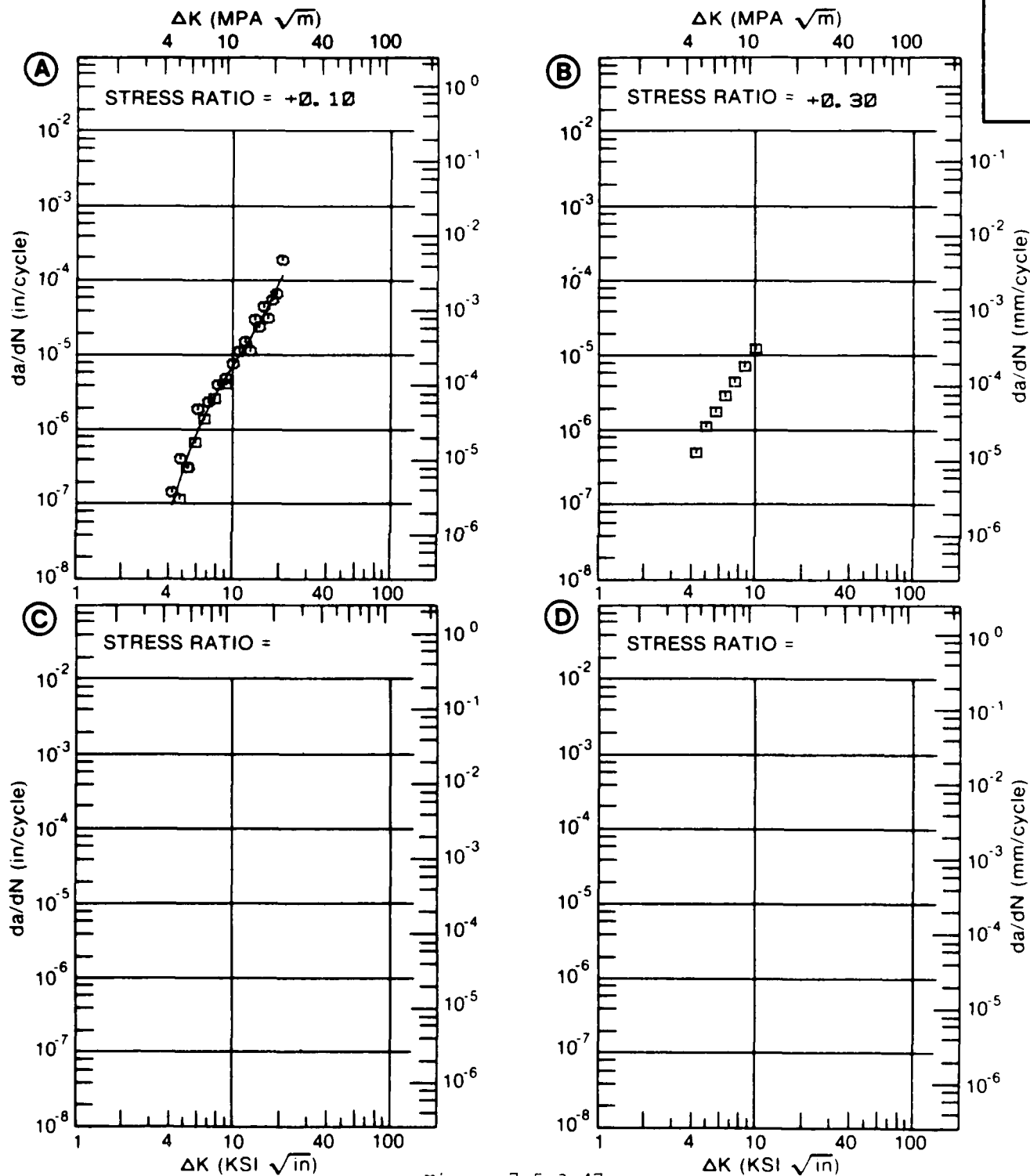


Figure 7.5.3.47

TABLE 7.5.3.48

**FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR**

**DATA ASSOCIATED WITH FIGURE 7.5.3.48 INDICATING EFFECT**

**OF STRESS RATIO**

MATERIAL: ALUMINUM 2024  
CONDITION: T851  
ENVIRONMENT: R. T. , H. H. A.

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		R=+0.10			
DELTA K MIN	A: 5.47	.653			
	B:				
	C:				
	D:				
	6.00	1.37			
	7.00	3.08			
DELTA K MAX	8.00	4.49			
	9.00	5.33			
	10.00	5.84			
	13.00	8.06			
	A: 15.84	16.5			
	B:				
MAX	C:				
	D:				

ROOT MEAN SQUARE 11.86  
PERCENT ERROR

LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25  
SUMMARY 1.25-2.0  
(NP/NA) >2.0

CONDITION/HT: T851  
 FORM: 0.38"TH PLATE  
 SPECIMEN TYPE: PTSF  
 ORIENTATION: L-S  
 FREQUENCY: 20.00 HZ  
 ENVIRONMENT: R. T., H. H. A.

YIELD STRENGTH: 70.1 KSI  
 ULT. STRENGTH: 73.5 KSI  
 SPECIMEN THK: 0.374- 0.377"  
 SPECIMEN WIDTH: 5.004- 5.006"  
 REFERENCES: 90981

ALUM.  
ALLOY

2024

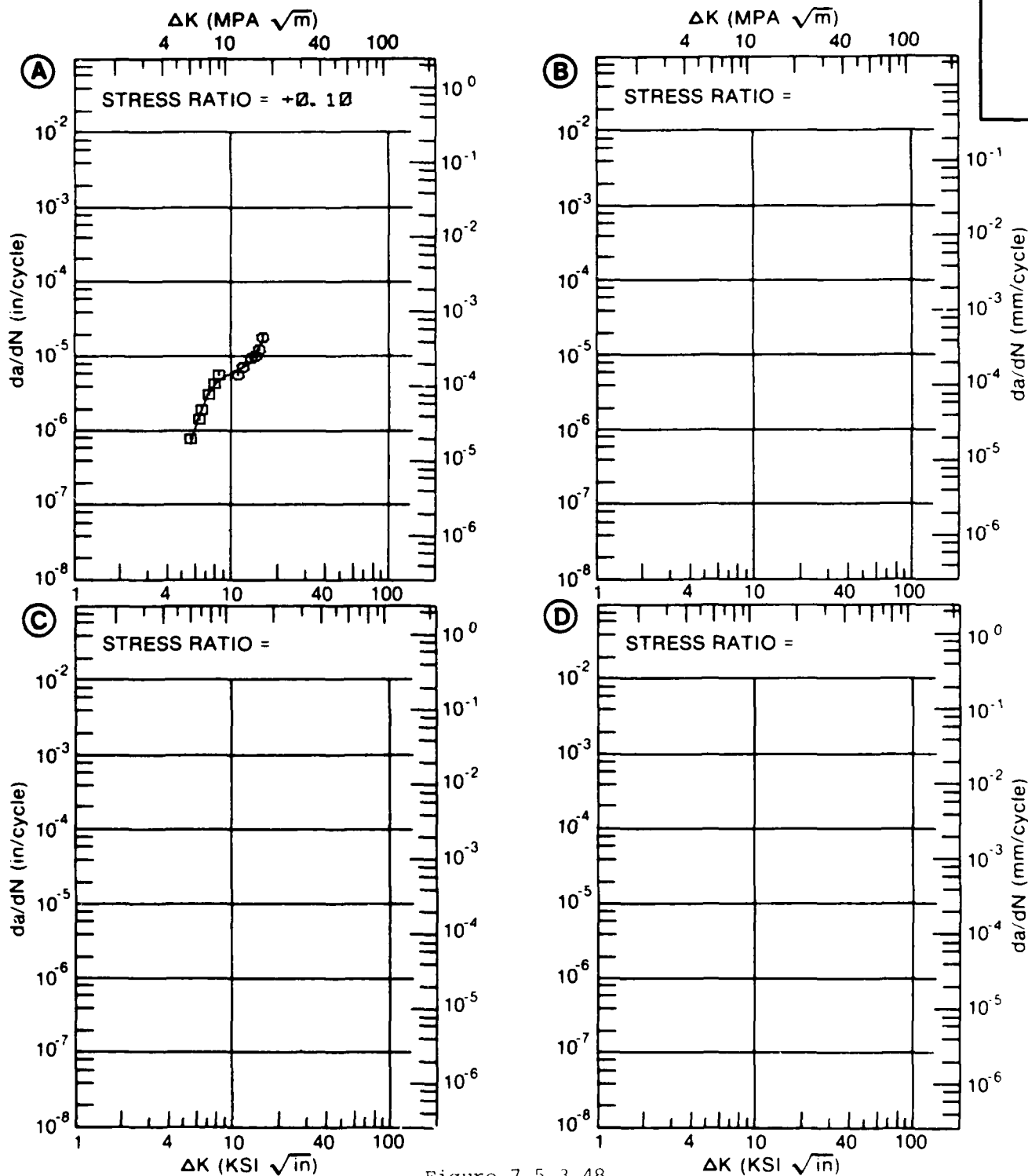


Figure 7.5.3.48

TABLE 7.5.3.49

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.5.3.49 INDICATING EFFECT  
OF STRESS RATIO

MATERIAL: ALUMINUM 2024  
CONDITION: T851  
ENVIRONMENT: R. T. , H. H. A.

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		R=+0.10	R=+0.50		
DELTA K MIN	A:	3.37	.24		
	B:				
	C:				
	D:				
	3.50	.259			
	4.00	.328			
	5.00	.576			
	6.00	1.01			
	7.00	1.66			
	8.00	2.55			
	9.00	3.65			
	10.00	4.87			
	13.00	9.08			
	16.00	17.2			
DELTA K MAX	A:	16.73	33.8		
	B:				
	C:				
	D:				
ROOT MEAN SQUARE		21.69	0.00		
PERCENT ERROR					

LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25  
SUMMARY 1.25-2.0  
(NP/NA) >2.0

CONDITION/HT: T851  
 FORM: 0.38" TH PLATE  
 SPECIMEN TYPE: PTSF  
 ORIENTATION: T-S  
 FREQUENCY: 20.00 HZ  
 ENVIRONMENT: R. T., H. H. A.

YIELD STRENGTH: 70.1 KSI  
 ULT. STRENGTH: 73.5 KSI  
 SPECIMEN THK: 0.376- 0.380"  
 SPECIMEN WIDTH: 5.003- 5.006"  
 REFERENCES: 90981

ALUM.  
 ALLOY

2024

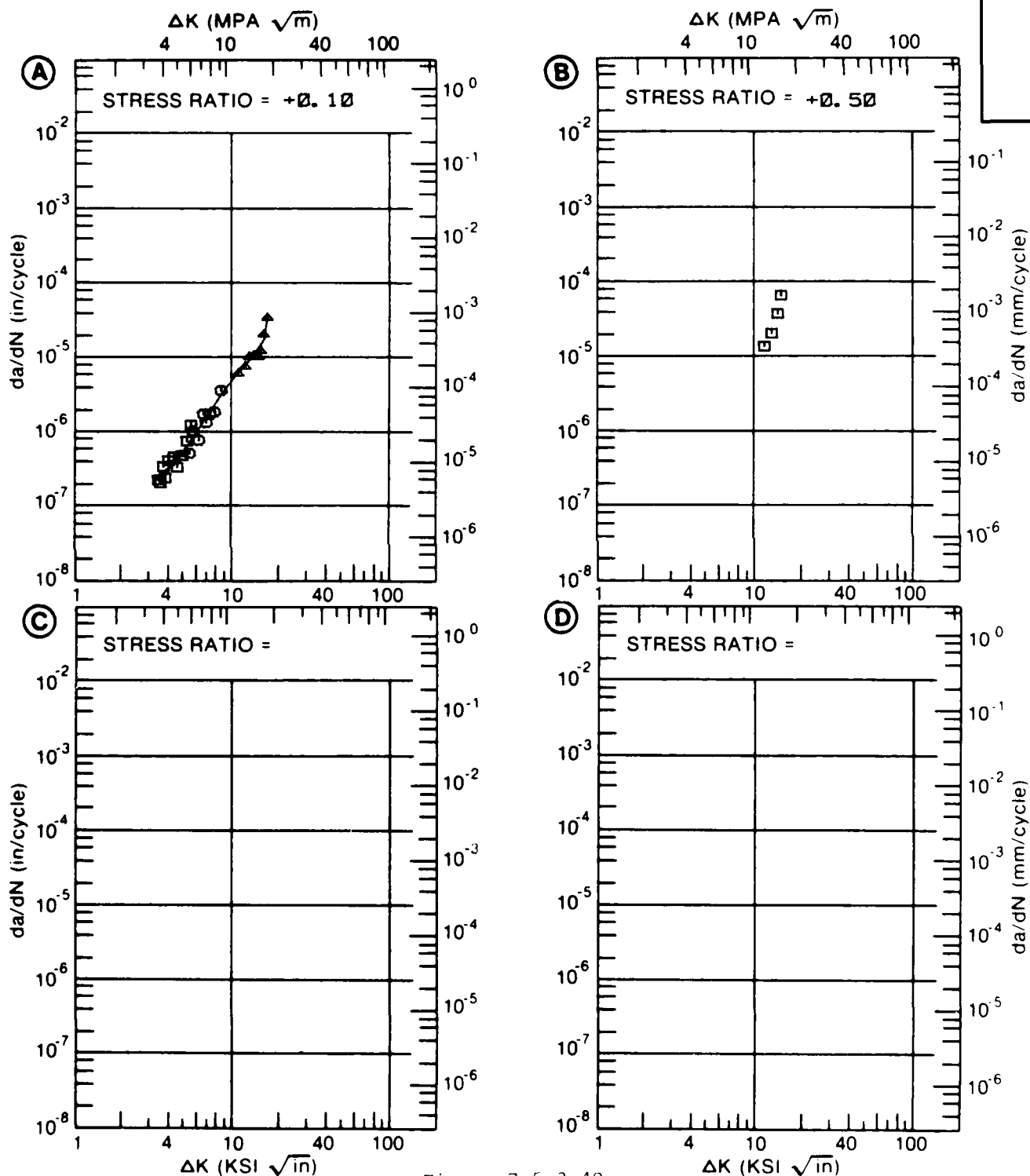


Figure 7.5.3.49

TABLE 7.5.3.50

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.5.3.50 INDICATING EFFECT

OF STRESS RATIO

MATERIAL: ALUMINUM 2024  
CONDITION: T851  
ENVIRONMENT: R. T. , 3. 5% NaCl

DELTA K  
(KSI\*IN\*\*1/2)

DA/DN (10\*\*--6 IN. /CYCLE)

A

B

C

D

R=+0. 10

R=+0. 50

DELTA K A: 5. 15  
MIN B: 3. 28  
C:  
D:

. 421

. 245

3. 50

. 286

4. 00

. 426

5. 00

. 960

6. 00

. 958

1. 94

7. 00

1. 95

3. 38

8. 00

3. 30

5. 07

9. 00

4. 92

6. 91

10. 00

6. 73

9. 96

13. 00

12. 3

DELTA K A: 13. 84  
MAX B: 10. 28  
C:  
D:

13. 8

11. 3

ROOT MEAN SQUARE  
PERCENT ERROR

33. 64

26. 04

LIFE 0. 0-0. 5  
PREDICTION 0. 5-0. 8  
RATIO 0. 8-1. 25  
SUMMARY 1. 25-2. 0  
(NP/NA) >2. 0

CONDITION/HT: T851  
 FORM: 0.38" TH PLATE  
 SPECIMEN TYPE: PTSF  
 ORIENTATION: T-S  
 FREQUENCY: 20.00 HZ  
 ENVIRONMENT: R. T., 3.5% NaCl

YIELD STRENGTH: 70.1 KSI  
 ULT. STRENGTH: 73.5 KSI  
 SPECIMEN THK: 0.377- 0.380"  
 SPECIMEN WIDTH: 5.002- 5.005"  
 REFERENCES: 90981

ALUM.  
 ALLOY

2024

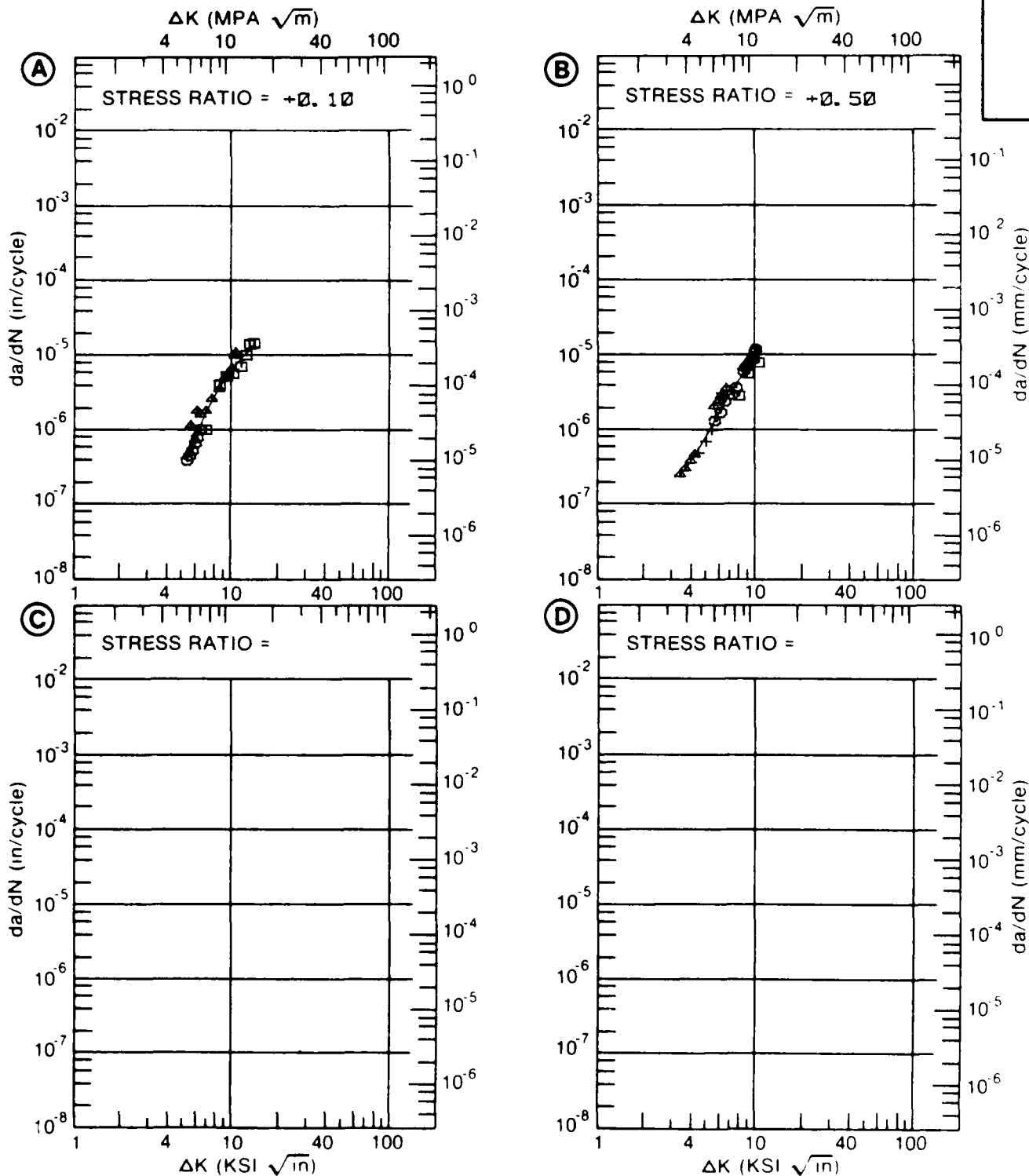


Figure 7.5.3.50

TABLE 7.5.3.51

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.5.3.51 INDICATING EFFECT

## OF STRESS RATIO

MATERIAL: ALUMINUM 2024  
 CONDITION: T851  
 ENVIRONMENT: R. T. , H. H. A.

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		R=+0.10	R=+0.50		
DELTA K MIN	A:	8.03	3.73		
	B:	2.48	.187		
	C:				
	D:				
		2.50	.176		
		3.00	.140		
		3.50	.298		
		4.00	.564		
		5.00	1.31		
		6.00	2.79		
		7.00	5.94		
		8.00	10.8		
		9.00	5.50	15.4	
		10.00	7.38	17.2	
		13.00	19.5		
		16.00	39.2		
		20.00	71.4		
DELTA K MAX	A:	22.79	166.		
	B:	10.53	16.5		
	C:				
	D:				

ROOT MEAN SQUARE 11.73 16.85  
 PERCENT ERROR

LIFE 0.0-0.5  
 PREDICTION 0.5-0.8  
 RATIO 0.8-1.25 1 1  
 SUMMARY 1.25-2.0  
 (NP/NA) >2.0



CONDITION/HT: T851  
 FORM: 0.38" TH PLATE  
 SPECIMEN TYPE: CCP  
 ORIENTATION: T-L  
 FREQUENCY: 20.00 HZ  
 ENVIRONMENT: R. T., H. H. A.

YIELD STRENGTH: 66.6 KSI  
 ULT. STRENGTH: 72.0 KSI  
 SPECIMEN THK: 0.375"  
 SPECIMEN WIDTH: 5.000"  
 REFERENCES: 90981

ALUM.  
 ALLOY

2024

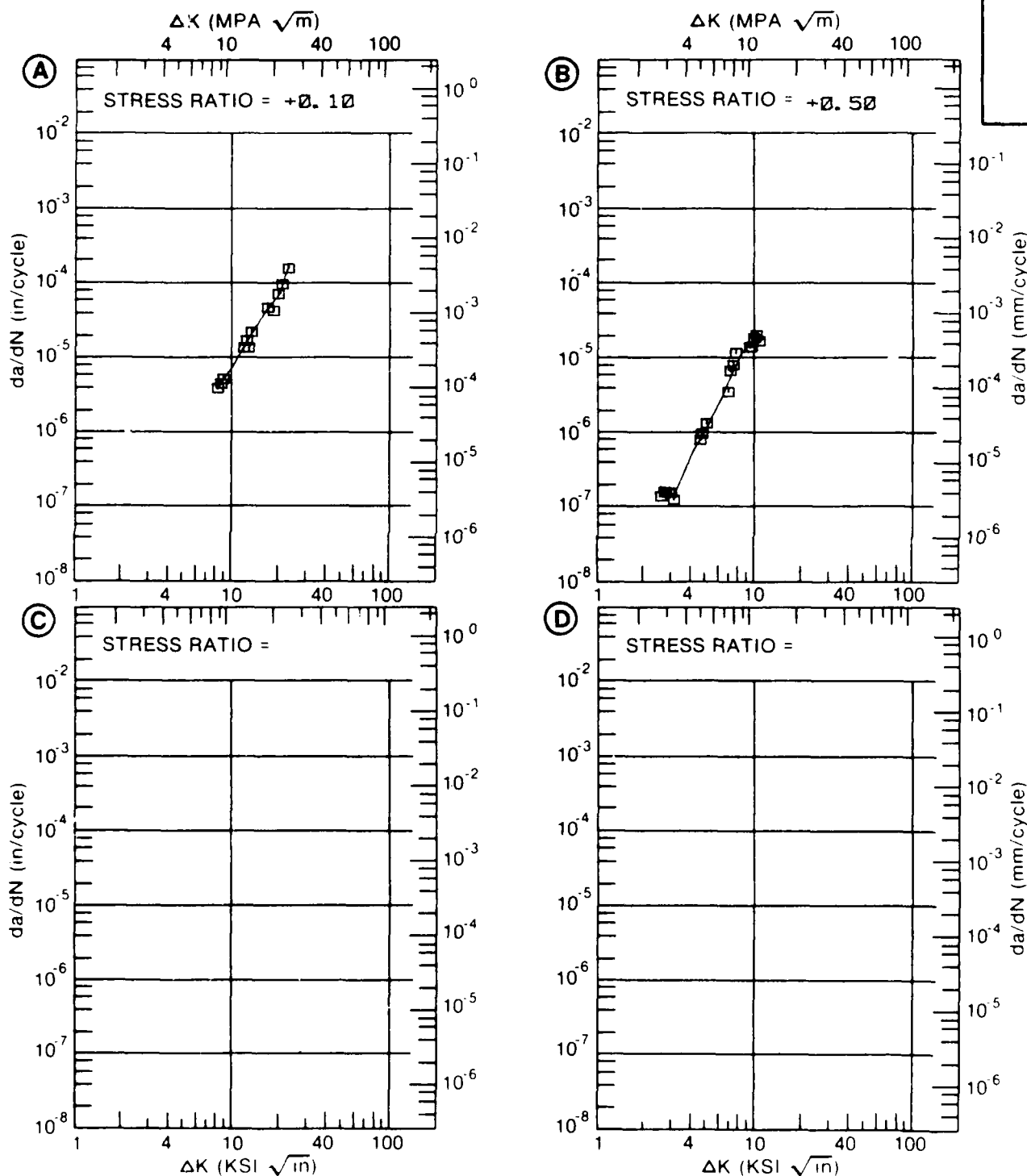


Figure 7.5.3.51

TABLE 7.5.3.52

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.5.3.52 INDICATING EFFECT  
OF STRESS RATIO

MATERIAL: ALUMINUM		2024			
CONDITION: T851					
ENVIRONMENT: R. T. , 3. 5% NACL					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		R=+0. 10			
DELTA K MIN	A:	4. 70	1. 16		
	B:				
	C:				
	D:				
	5. 00	1. 47			
	6. 00	2. 70			
	7. 00	4. 24			
	8. 00	6. 10			
	9. 00	8. 34			
	10. 00	11. 1			
	13. 00	23. 6			
	16. 00	48. 4			
	20. 00	126.			
	25. 00	428.			
DELTA K MAX	A:	28. 22	952.		
	B:				
	C:				
	D:				
ROOT MEAN SQUARE		13. 07			
PERCENT ERROR					
LIFE	0. 0-0. 5				
PREDICTION	0. 5-0. 8				
RATIO	0. 8-1. 25	1			
SUMMARY	1. 25-2. 0				
(NP/NA)	>2. 0				

CONDITION/HT: T851  
 FORM: 0.38" TH PLATE  
 SPECIMEN TYPE: CCP  
 ORIENTATION: T-L  
 FREQUENCY: 20.00 HZ  
 ENVIRONMENT: R. T., 3.5% NaCl

YIELD STRENGTH: 66.6 KSI  
 ULT. STRENGTH: 72.0 KSI  
 SPECIMEN THK: 0.375"  
 SPECIMEN WIDTH: 5.000"  
 REFERENCES: 90981

ALUM.  
 ALLOY

2024

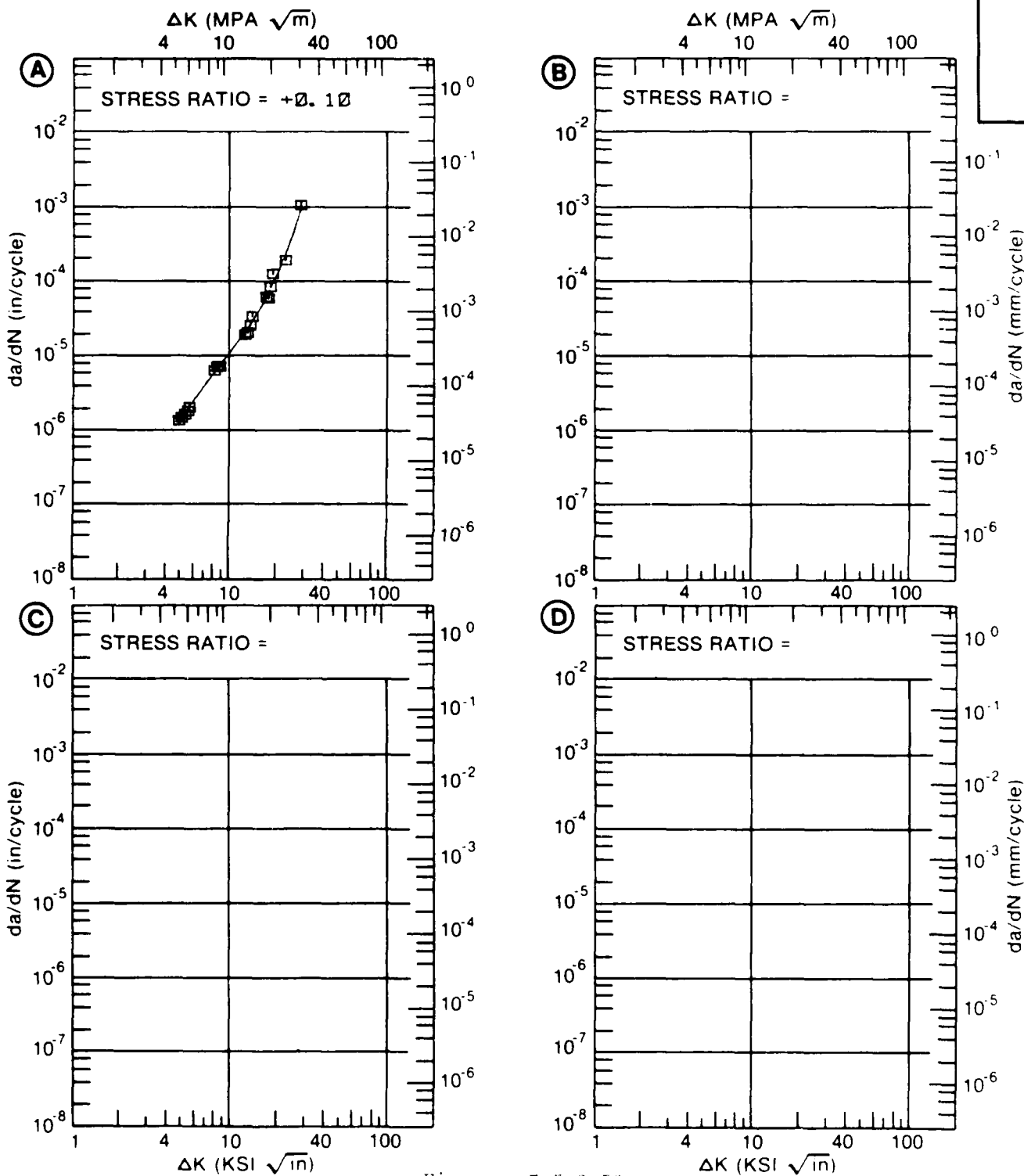


Figure 7.5.3.52

TABLE 7.5.3.53

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.5.3.53 INDICATING EFFECT

OF FREQUENCY

MATERIAL: ALUMINUM 2024  
CONDITION: T851  
ENVIRONMENT: R. T. , H. H. A.

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		F(HZ)= 20.00 F(HZ)= 30.00			
DELTA K MIN	A:	4.52	.487		
	B:	4.77	.335		
	C:				
	D:				
		5.00	.501	.344	
		6.00	1.18	.492	
		7.00		.957	
		8.00		2.30	
		9.00		5.08	
DELTA K MAX	A:	6.88	2.95		
	B:	9.90	5.11		
	C:				
	D:				
ROOT MEAN SQUARE		13.49	12.28		
PERCENT ERROR					

LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25  
SUMMARY 1.25-2.0  
(NP/NA) >2.0

CONDITION/HT: T851  
 FORM: 0.75" TH PLATE  
 SPECIMEN TYPE: PTSF  
 ORIENTATION: L-S  
 STRESS RATIO: +0.10  
 ENVIRONMENT: R. T., H. H. A.

YIELD STRENGTH: 70.1 KSI  
 ULT. STRENGTH: 73.5 KSI  
 SPECIMEN THK: 0.759- 0.760"  
 SPECIMEN WIDTH: 5.003"  
 REFERENCES: 90981

ALUM.  
 ALLOY

2024

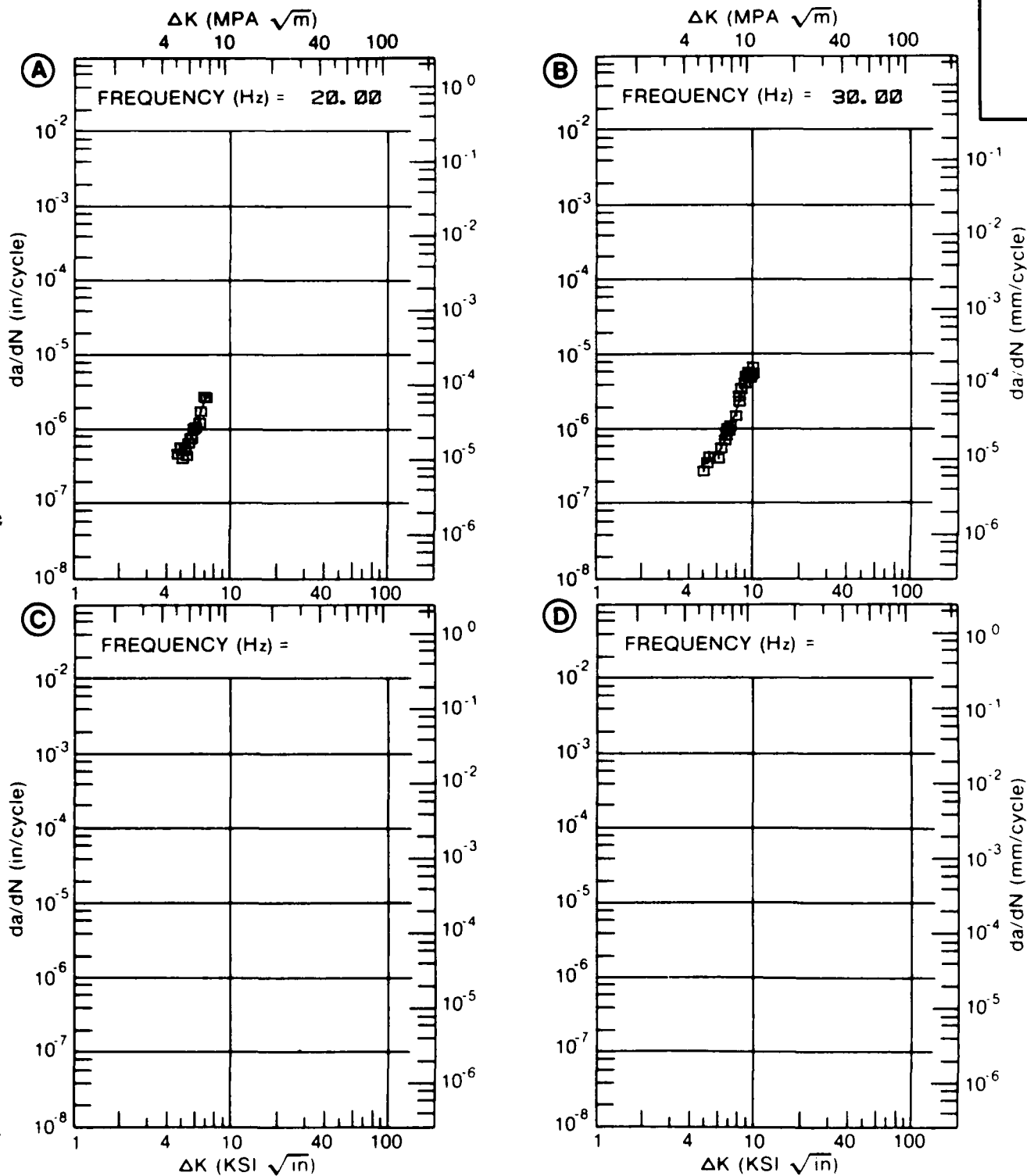


Figure 7.5.3.53

TABLE 7.5.3.54

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.5.3.54 INDICATING EFFECT

OF ENVIRONMENT

MATERIAL: ALUMINUM  
CONDITION: T851

2024

DELTA K  
(KSI\*IN\*\*1/2)

DA/DN (10\*\*-6 IN. /CYCLE)

A

B

C

D

E= R. T.

H. H. A.

DELTA K A: 2.75 : .0113  
B:  
MIN C:  
D:

3.00 : .0269  
3.50 : .101  
4.00 : .261  
5.00 : .929  
6.00 : 2.09  
7.00 : 3.72  
8.00 : 5.85  
9.00 : 8.61  
10.00 : 12.2  
13.00 : 32.3  
16.00 : 85.6

DELTA K A: 16.67 : 107.  
B:  
MAX C:  
D:

ROOT MEAN SQUARE 17.12  
PERCENT ERROR

LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25  
SUMMARY 1.25-2.0  
(NP/NA) >2.0

CONDITION/HT: T851  
 FORM: 0.75" TH PLATE  
 SPECIMEN TYPE: WOL  
 ORIENTATION: L-T  
 STRESS RATIO: +0.33  
 FREQUENCY: 25.00 HZ

YIELD STRENGTH: 67.0 KSI  
 ULT. STRENGTH: 71.0 KSI  
 SPECIMEN THK: 0.250"  
 SPECIMEN WIDTH: 2.550"  
 REFERENCES: NC003

ALUM.  
ALLOY

2024

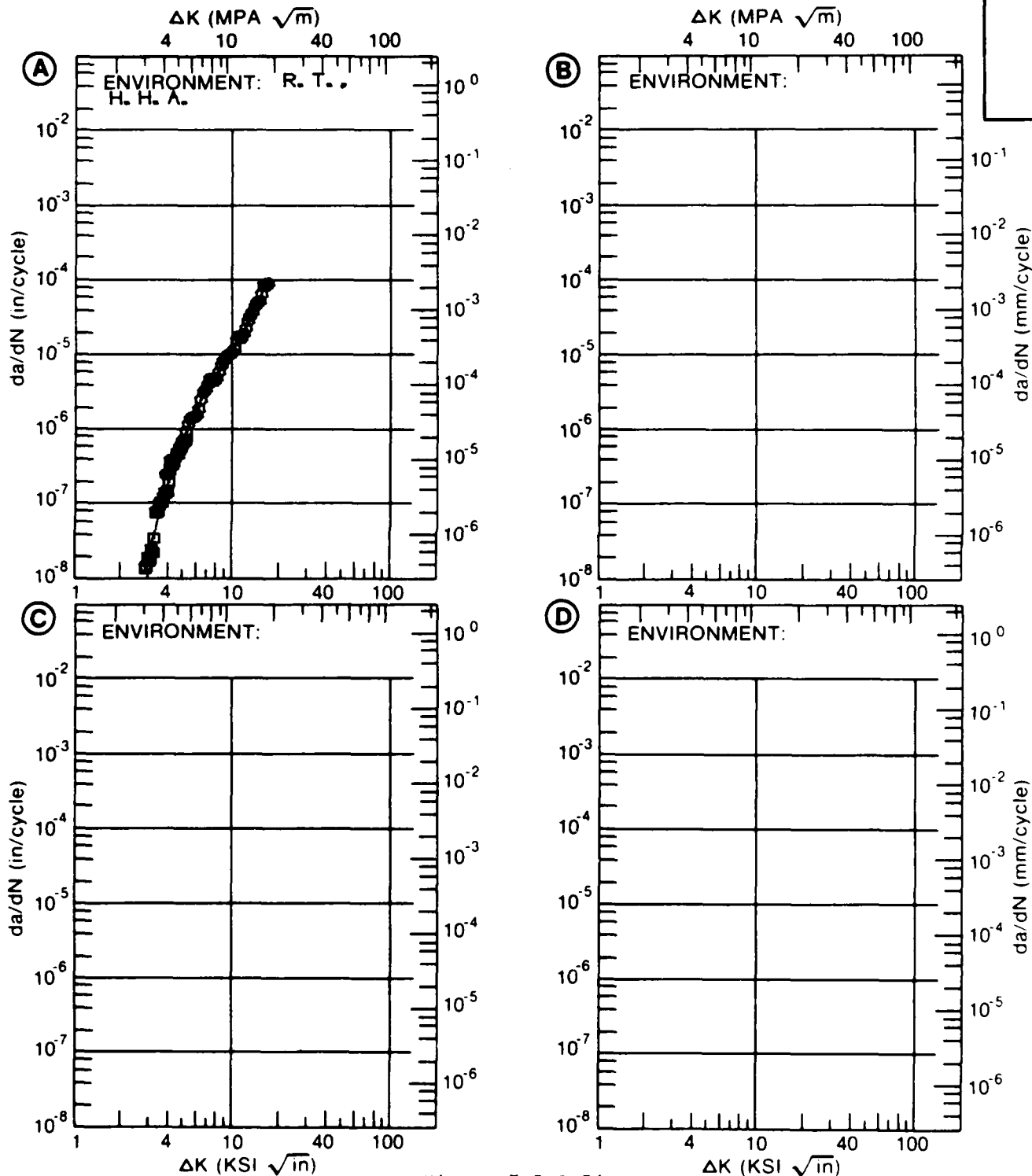


Figure 7.5.3.54

TABLE 7.5.3.55

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.5.3.55 INDICATING EFFECT  
OF STRESS RATIO

MATERIAL: ALUMINUM		2024			
CONDITION: T851					
ENVIRONMENT: R. T. , H. H. A.					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		R=+0. 10	R=+0. 50		
DELTA K A:	3. 22	. 16			
MIN B:	1. 82		. 04		
C:	2				
D:					
	2. 00		. 0515		
	2. 50		. 0796		
	3. 00		. 142		
	3. 50	. 211	. 255		
	4. 00	. 314	. 443		
	5. 00	. 639	1. 13		
	6. 00	1. 16	2. 26		
	7. 00	1. 89	3. 70		
	8. 00	2. 84	5. 10		
	9. 00	3. 97	6. 09		
	10. 00	5. 24	6. 47		
	13. 00	9. 14			
	16. 00	12. 0			
DELTA K A:	18. 47	13. 0			
MAX B:	10. 31		6. 46		
C:					
D:					
ROOT MEAN SQUARE		36. 98	35. 40		
PERCENT ERROR					
LIFE	0. 0-0. 5				
PREDICTION	0. 5-0. 8				
RATIO	0. 8-1. 25				
SUMMARY	1. 25-2. 0				
(NP/NA)	>2. 0				



CONDITION/HT: T851  
 FORM: 0.75" TH PLATE  
 SPECIMEN TYPE: PTSF  
 ORIENTATION: T-S  
 FREQUENCY: 20.00 HZ  
 ENVIRONMENT: R. T., H. H. A.

YIELD STRENGTH: 70.1 KSI  
 ULT. STRENGTH: 73.5 KSI  
 SPECIMEN THK: 0.758- 0.764"  
 SPECIMEN WIDTH: 5.000- 5.005"  
 REFERENCES: 90981

ALUM.  
 ALLOY

2024

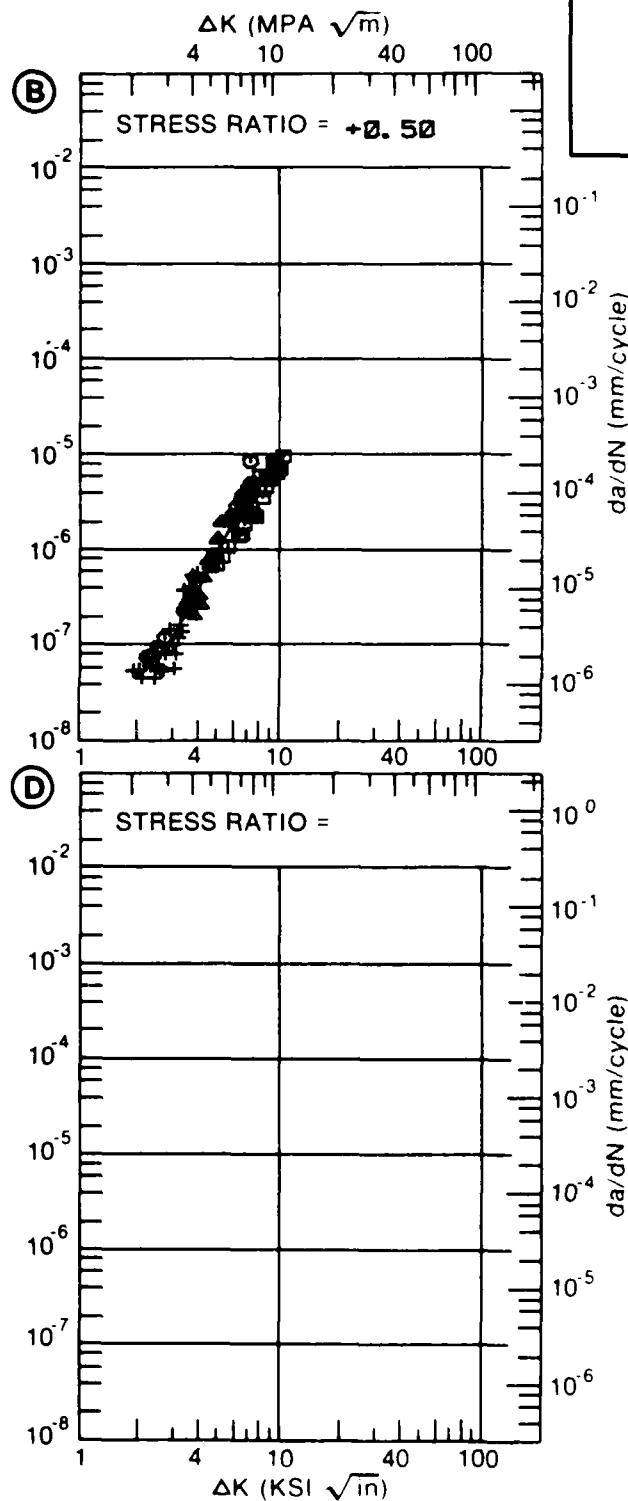
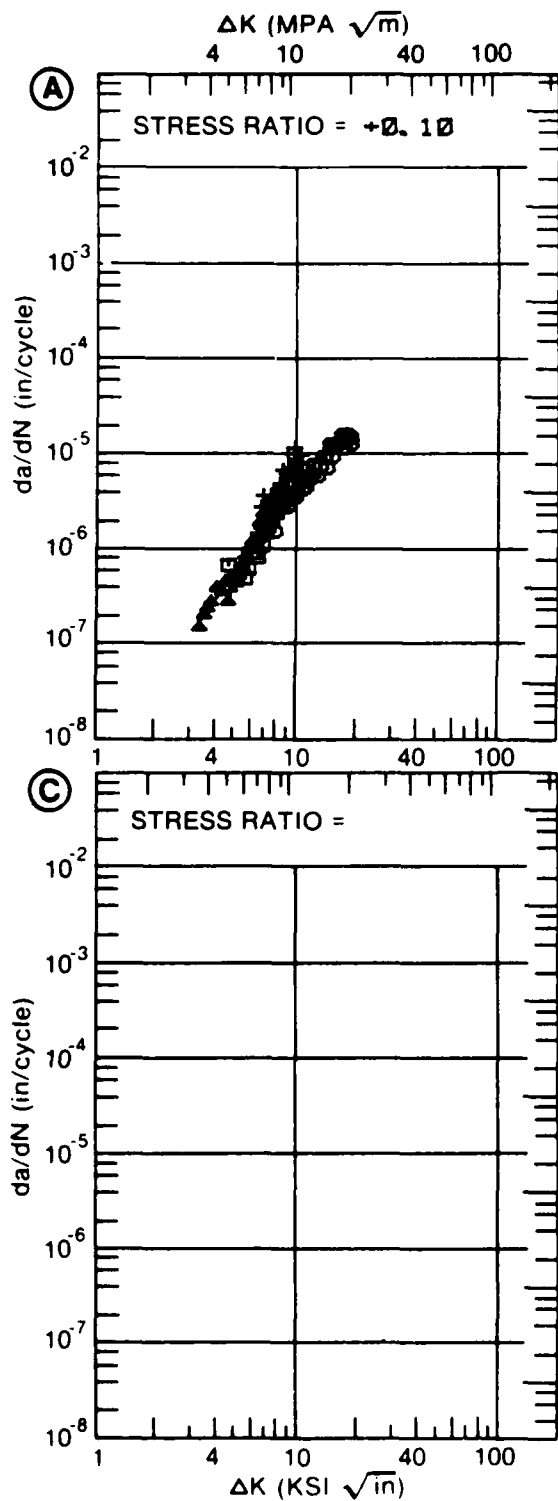


Figure 7.5.3.55

TABLE 7.5.3.56

**FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR**

**DATA ASSOCIATED WITH FIGURE 7.5.3.56 INDICATING EFFECT**

**OF STRESS RATIO**

MATERIAL: ALUMINUM		2024			
CONDITION: T851					
ENVIRONMENT: R. T. . H. H. A.					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		R=+0. 10	R=+0. 50		
DELTA K MIN	A: 11. 66 :	7. 64			
	B: 4. 25 :		. 34		
	C:				
	D:				
	5. 00 :		. 991		
	6. 00 :		2. 04		
	7. 00 :		3. 05		
	8. 00 :		4. 37		
	9. 00 :		6. 73		
	10. 00 :		11. 7		
DELTA K MAX	13. 00 :	9. 86			
	16. 00 :	19. 7			
	A: 18. 52 :	52. 3			
	B: 10. 47 :		16. 0		
	C:				
	D:				
ROOT MEAN SQUARE		19. 13	22. 28		
PERCENT ERROR					
LIFE	0. 0-0. 5				
PREDICTION	0. 5-0. 8				
RATIO	0. 8-1. 25				
SUMMARY	1. 25-2. 0				
(NP/NA)	>2. 0				

CONDITION/HT: T851  
 FORM: 0.75" TH PLATE  
 SPECIMEN TYPE: PTSF  
 ORIENTATION: T-S  
 FREQUENCY: 2.00 HZ  
 ENVIRONMENT: R. T., H. H. A.

YIELD STRENGTH: 70.1 KSI  
 ULT. STRENGTH: 73.5 KSI  
 SPECIMEN THK: 0.759- 0.763"  
 SPECIMEN WIDTH: 5.004- 5.006"  
 REFERENCES: 90981

ALUM.  
 ALLOY

2024

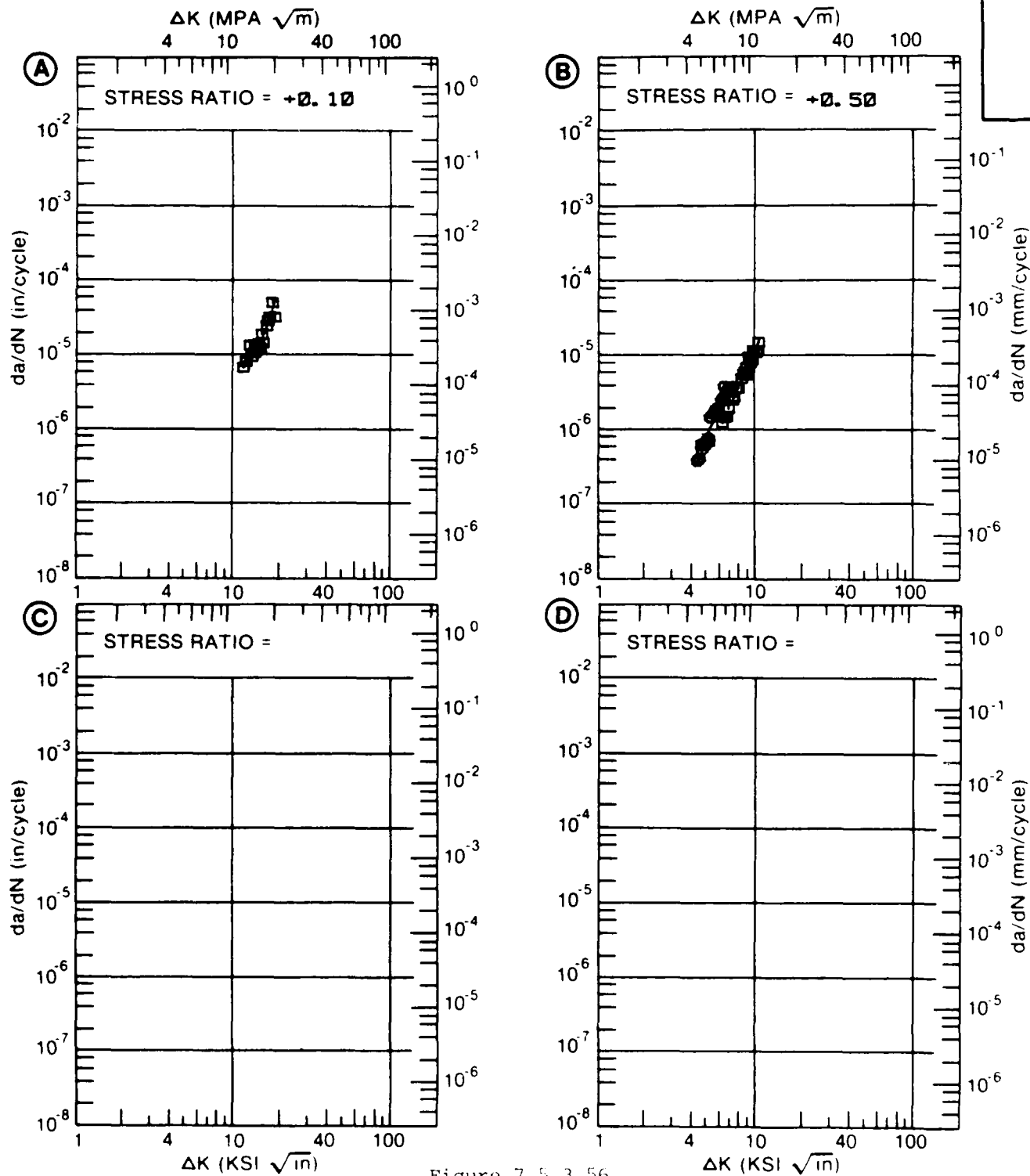


Figure 7.5.3.56

TABLE 7.5.3.57

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.5.3.57 INDICATING EFFECT  
OF STRESS RATIO

MATERIAL: ALUMINUM 2024  
CONDITION: T851  
ENVIRONMENT: R. T. , 3.5% NaCl

DELTA K (KSI*IN**1/2)		DA/DN (10** <sup>-6</sup> IN. /CYCLE)			
		A	B	C	D
		R=+0.10			
DELTA K MIN	A: 8.12	4.28			
	B:				
	C:				
	D:				
	9.00	5.11			
	10.00	5.92			
	13.00	10.6			
	16.00	33.0			
DELTA K MAX	A: 17.38	67.8			
	B:				
	C:				
	D:				
ROOT MEAN SQUARE		17.89			
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25				
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION/HT: T851  
 FORM: Ø. 76" TH PLATE  
 SPECIMEN TYPE: PTSF  
 ORIENTATION: T-S  
 FREQUENCY: 20.00 HZ  
 ENVIRONMENT: R. T. . 3. 5% NACL

YIELD STRENGTH: 70.1 KSI  
 ULT. STRENGTH: 73.5 KSI  
 SPECIMEN THK: Ø. 763"  
 SPECIMEN WIDTH: 5.003"  
 REFERENCES: 90981

ALUM.  
 ALLOY

2024

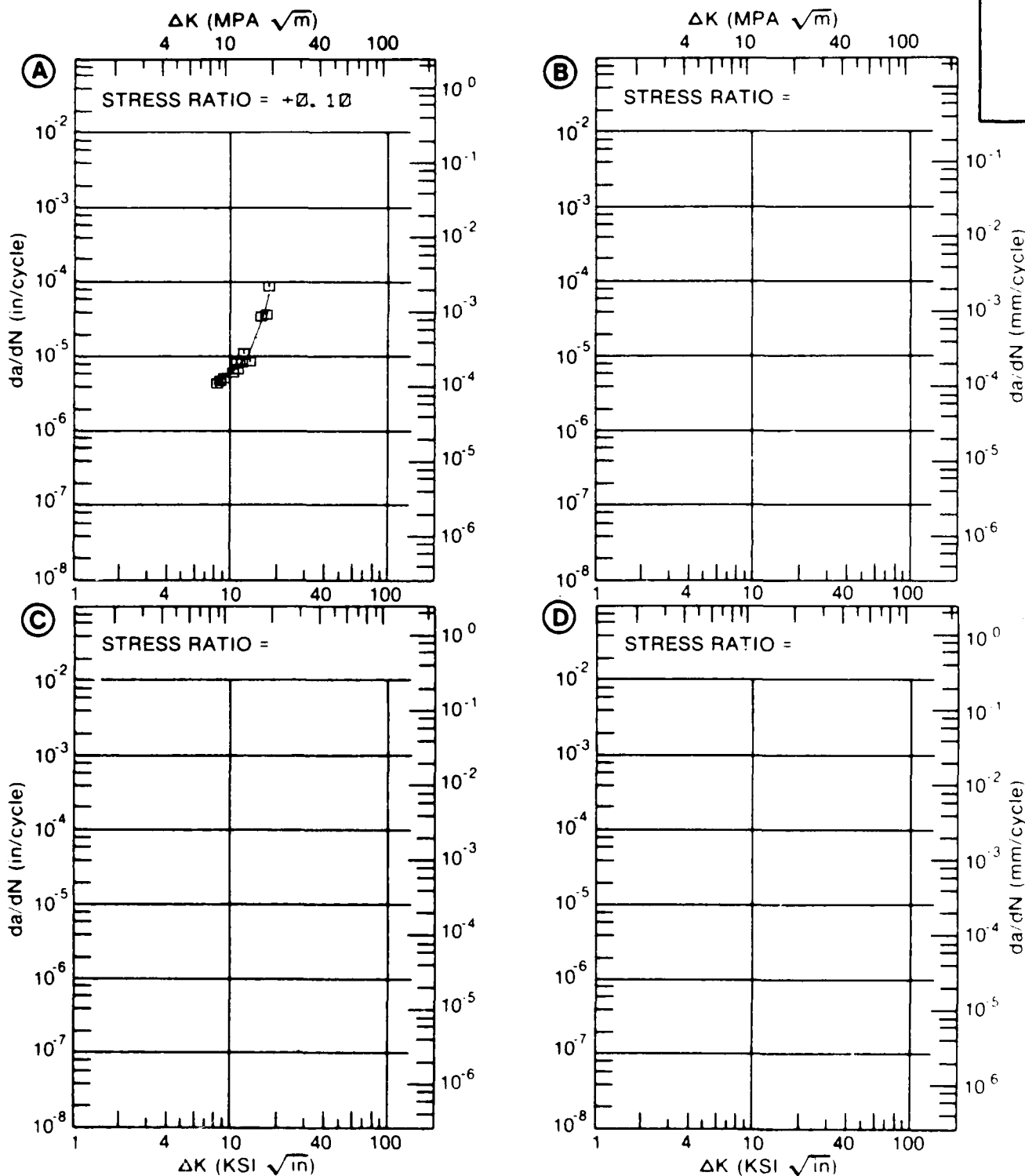


Figure 7.5.3.57

TABLE 7.5.3.58

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.5.3.58 INDICATING EFFECT  
OF STRESS RATIO

MATERIAL: ALUMINUM		2024			
CONDITION: T851					
ENVIRONMENT: R. T. , 3. 5% NACL					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		R=+0. 10	R=+0. 50		
A:	4. 82	. 988			
DELTA K B:	5. 20		968		
MIN C:					
D:					
	5. 00	1. 18			
	6. 00	2. 08	1. 78		
	7. 00	2. 68	3. 18		
	8. 00	3. 23	5. 04		
	9. 00	4. 12	7. 48		
	10. 00	5. 81	10. 7		
	13. 00		28. 3		
	16. 00		72. 8		
	20. 00		265.		
A:	11. 40	11. 5			
DELTA K B:	20. 76		340.		
MAX C:					
D:					
ROOT MEAN SQUARE		16. 87	21. 52		
PERCENT ERROR					
LIFE	0. 0-0. 5				
PREDICTION	0. 5-0. 8				
RATIO	0. 8-1. 25				
SUMMARY	1. 25-2. 0				
(NP/NA)	>2. 0				

CONDITION/HT: T851  
 FORM: 0.75" TH PLATE  
 SPECIMEN TYPE: PTSF  
 ORIENTATION: T-S  
 FREQUENCY: 20.00 HZ  
 ENVIRONMENT: R. T., 3.5% NaCl

YIELD STRENGTH: 70.1 KSI  
 ULT. STRENGTH: 73.5 KSI  
 SPECIMEN THK: 0.750- 0.763"  
 SPECIMEN WIDTH: 5.000- 5.005"  
 REFERENCES: 90981

ALUM.  
 ALLOY

2024

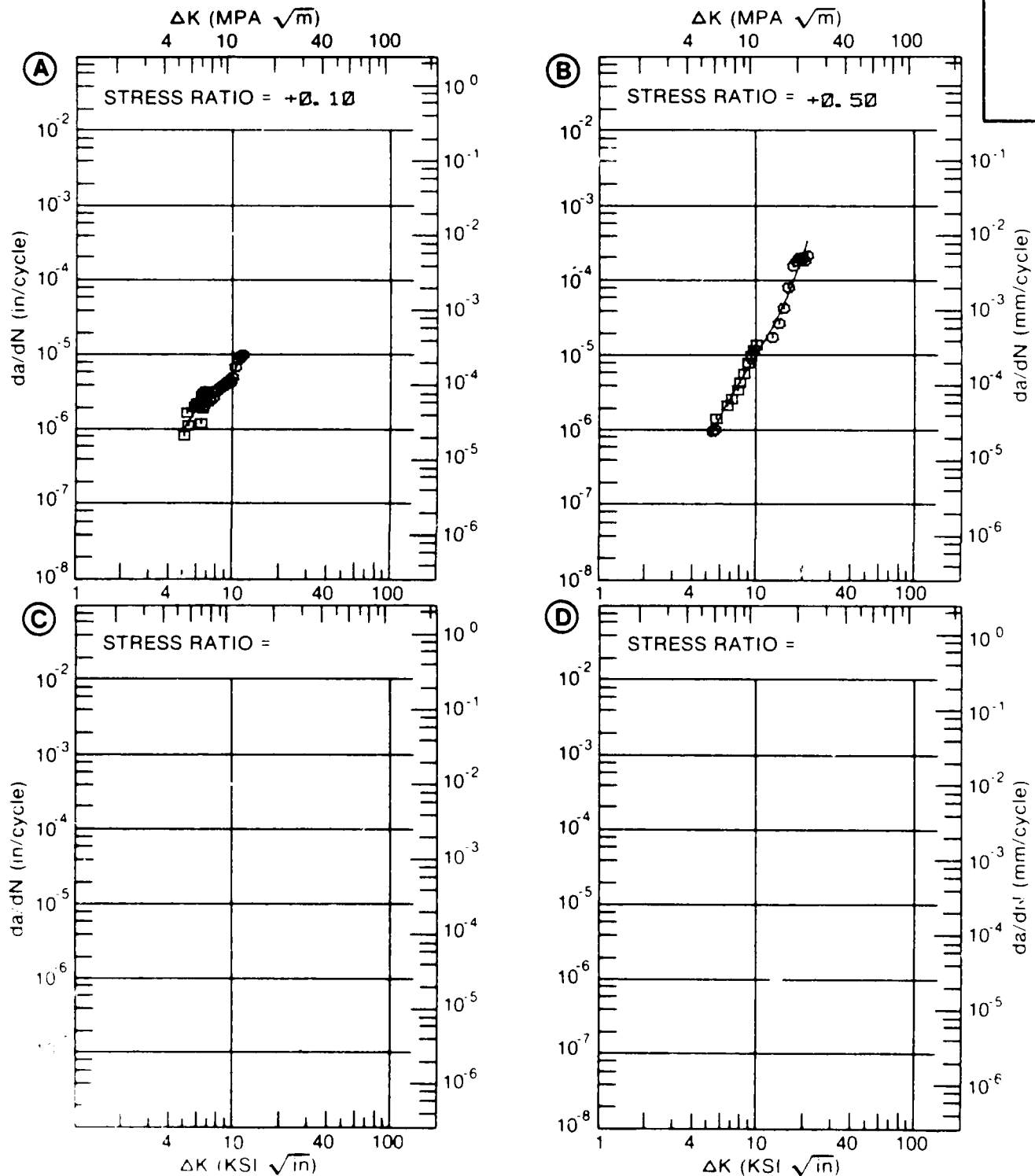


Figure 7.5.3.58

TABLE 7.5.3.59

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.5.3.59 INDICATING EFFECT  
OF STRESS RATIO

MATERIAL: ALUMINUM		2024			
CONDITION: T851					
ENVIRONMENT: R. T. , H. H. A.					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		R=+0. 10			
DELTA K MIN	A:	4. 01	. 339		
	B:				
	C:				
	D:				
	5. 00	. 509			
	6. 00	1. 26			
	7. 00	2. 58			
	8. 00	4. 36			
	9. 00	6. 54			
	10. 00	9. 04			
	13. 00	18. 0			
	16. 00	29. 5			
DELTA K MAX	A:	18. 82	57. 7		
	B:				
	C:				
	D:				
ROOT MEAN SQUARE		7. 74			
PERCENT ERROR					
LIFE	0. 0-0. 5				
PREDICTION	0. 5-0. 8				
RATIO	0. 8-1. 25	1			
SUMMARY	1. 25-2. 0				
(NP/NA)	>2. 0				



CONDITION/HT: T851  
 FORM: 0.75" TH PLATE  
 SPECIMEN TYPE: CCP  
 ORIENTATION: T-L  
 FREQUENCY: 20.00 HZ  
 ENVIRONMENT: R. T., H. H. A.

YIELD STRENGTH: 68.6 KSI  
 ULT. STRENGTH: 73.0 KSI  
 SPECIMEN THK: 0.761"  
 SPECIMEN WIDTH: 5.000"  
 REFERENCES: 90981

ALUM.  
 ALLOY

2024

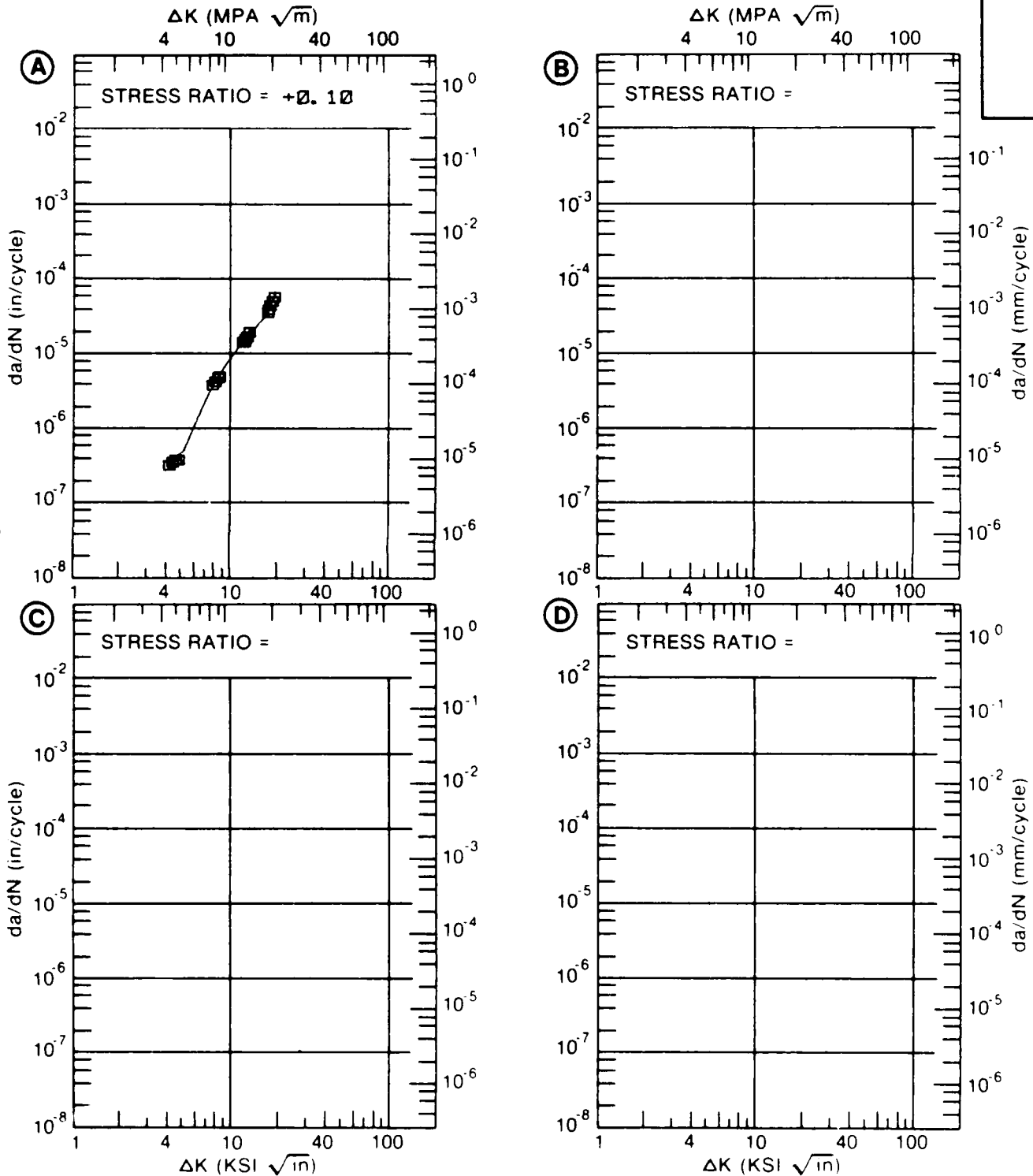


Figure 7.5.3.59

TABLE 7.5.3.60

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.5.3.60 INDICATING EFFECT  
OF ENVIRONMENT

MATERIAL: ALUMINUM		2024			
CONDITION: T851					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R. T. H. H. A.	E= R. T. 3. 5% NACL		
DELTA K MIN	A:	11. 66	7. 64		
	B:				
	C:				
	D:				
		13. 00	9. 86		
		16. 00	19. 7		
DELTA K MAX	A:	18. 52	52. 3		
	B:				
	C:				
	D:				
ROOT MEAN SQUARE		19. 13	0. 00		
PERCENT ERROR					
LIFE	0. 0-0. 5				
PREDICTION	0. 5-0. 8				
RATIO	0. 8-1. 25				
SUMMARY	1. 25-2. 0				
(NP/NA)	>2. 0				

CONDITION/HT: T851  
 FORM: 0.75" TH PLATE  
 SPECIMEN TYPE: P-SF  
 ORIENTATION: T-S  
 STRESS RATIO: +0.10  
 FREQUENCY: 2.00 HZ

YIELD STRENGTH: 70.1 KSI  
 ULT. STRENGTH: 73.5 KSI  
 SPECIMEN THK: 0.759- 0.763"  
 SPECIMEN WIDTH: 5.003- 5.004"  
 REFERENCES: 90981

ALUM.  
 ALLOY

2024

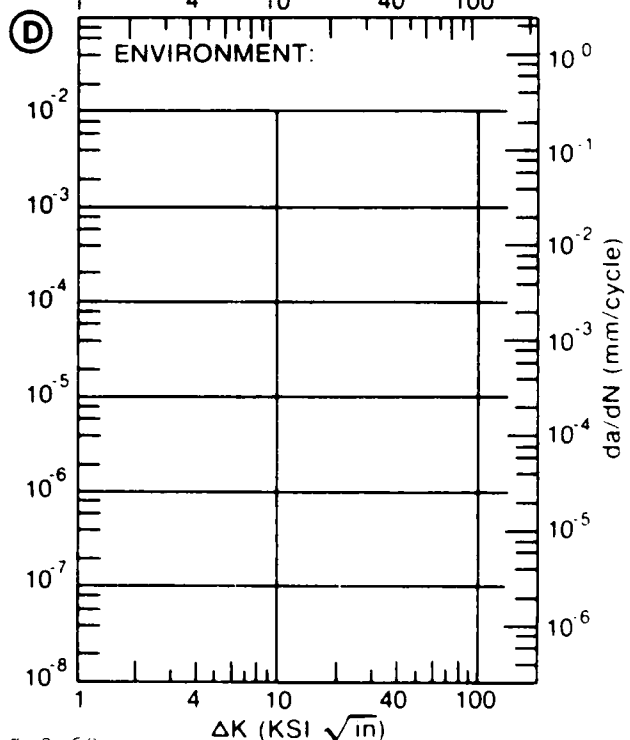
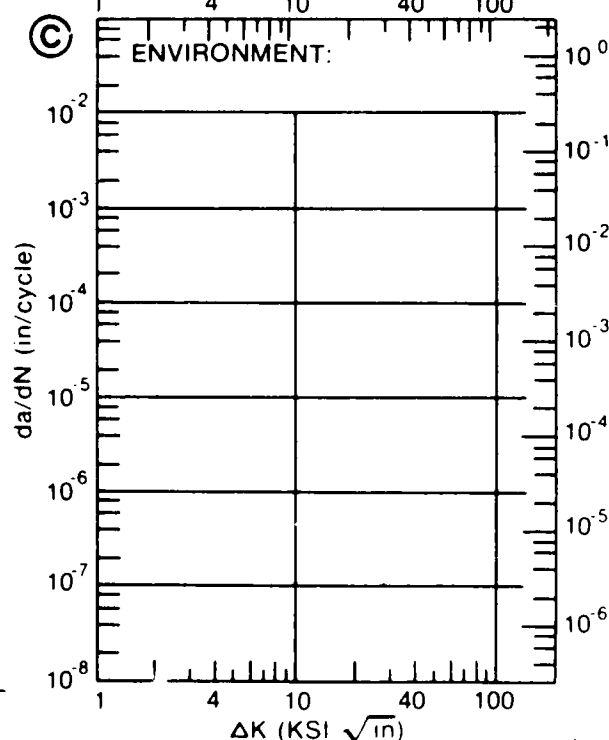
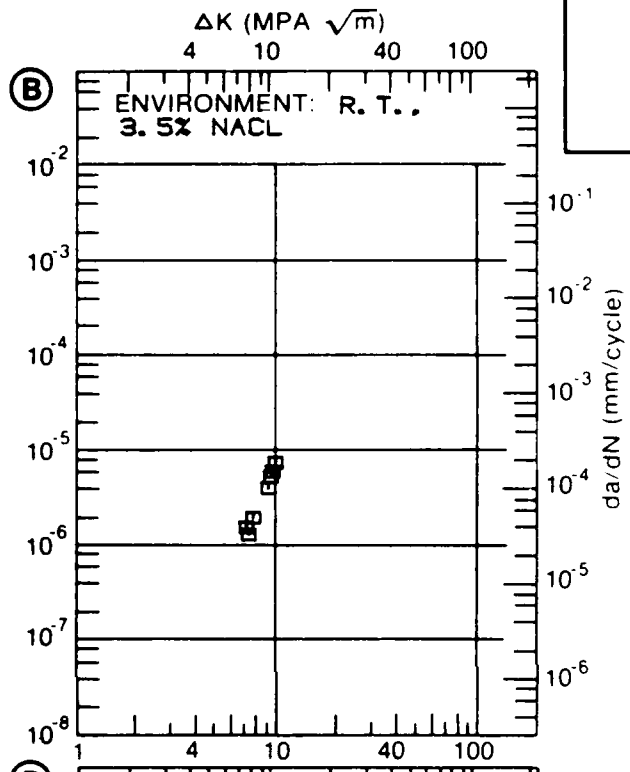
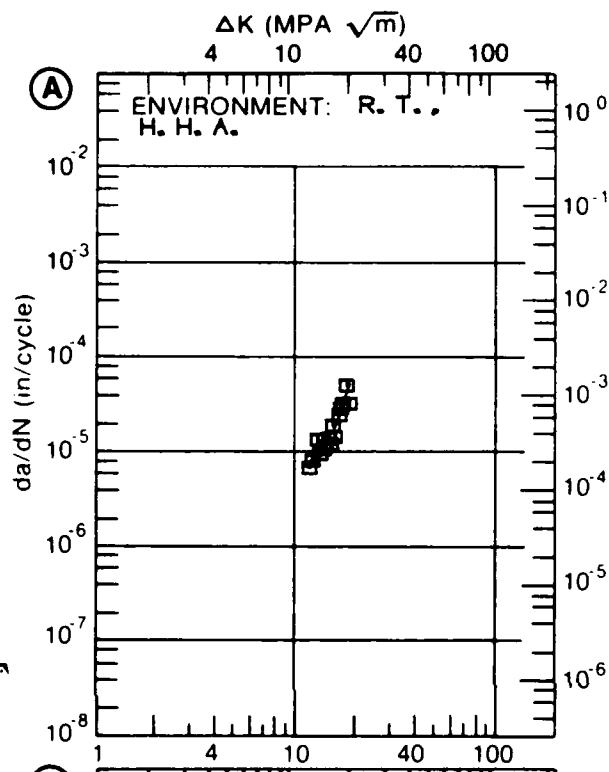


Figure 7.5.3.60

TABLE 7.5.3.61

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.5.3.61 INDICATING EFFECT

OF STRESS RATIO

MATERIAL: ALUMINUM		2024			
CONDITION: T851					
ENVIRONMENT: R. T. , 3.5% NaCl					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		R=+0.10	R=+0.50		
DELTA K MIN	A:	3.33	.193		
	B:	2.12	.119		
	C:				
	D:				
		2.50	.215		
		3.00	.406		
		3.50	.236	.689	
		4.00	.399	1.08	
		5.00	.915	2.28	
		6.00	1.75	4.17	
		7.00	2.98	6.93	
		8.00	4.68	10.7	
		9.00	6.96	15.8	
		10.00	9.93	22.4	
		13.00	24.3		
		16.00	50.5		
DELTA K MAX	A:	16.68	58.8		
	B:	11.10	31.7		
	C:				
	D:				
ROOT MEAN SQUARE		22.26	18.87		
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25	1	1		
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION/HT: T851  
 FORM: 0.75" TH PLATE  
 SPECIMEN TYPE: CCP  
 ORIENTATION: T-L  
 FREQUENCY: 20.00 HZ  
 ENVIRONMENT: R. T., 3.5% NaCl

YIELD STRENGTH: 68.6 KSI  
 ULT. STRENGTH: 73.0 KSI  
 SPECIMEN THK: 0.760"  
 SPECIMEN WIDTH: 5.000"  
 REFERENCES: 90981

ALUM.  
ALLOY

2024

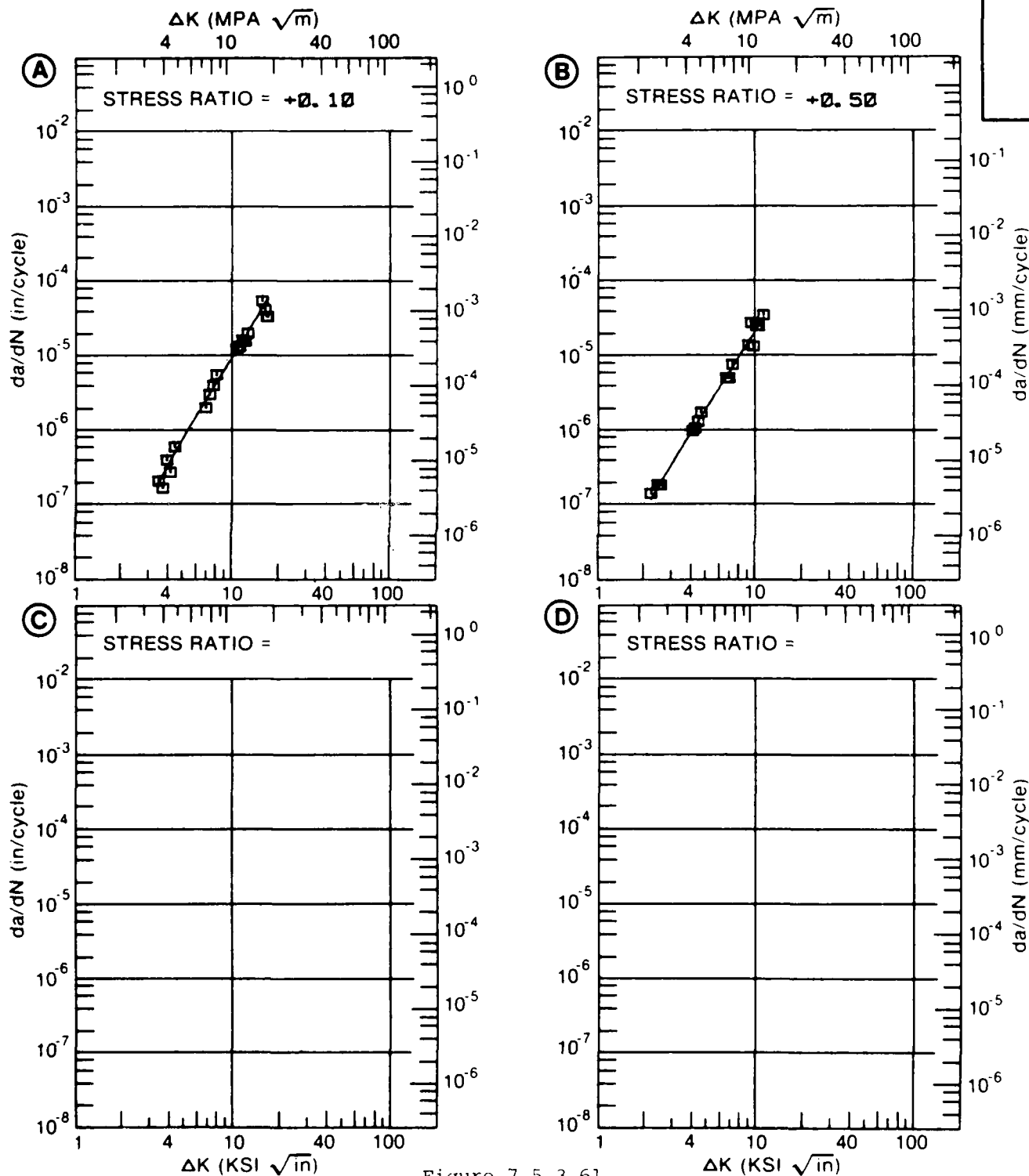


Figure 7.5.3.61

TABLE 7.5.3.62

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.5.3.62 INDICATING EFFECT  
OF STRESS RATIO

MATERIAL: ALUMINUM		2024			
CONDITION: T851					
ENVIRONMENT: R. T. , DRY AIR					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		R=+0. 20	R=+0. 40		
DELTA K	A:				
MIN	B:				
	C:				
	D:				
	200. 00				
DELTA K	A:				
MAX	B:				
	C:				
	D:				
ROOT MEAN SQUARE		0. 00	0. 00		
PERCENT ERROR					
LIFE	0. 0-0. 5				
PREDICTION	0. 5-0. 8				
RATIO	0. 8-1. 25				
SUMMARY	1. 25-2. 0				
(NP/NA)	>2. 0				

CONDITION/HT: T851  
 FORM: 2.00" TH PLATE  
 SPECIMEN TYPE: DCB  
 ORIENTATION: L-T  
 FREQUENCY: 10.00 HZ  
 ENVIRONMENT: R. T., DRY AIR

YIELD STRENGTH: 64.0 KSI  
 ULT. STRENGTH: 71.0 KSI  
 SPECIMEN THK: 0.750"  
 SPECIMEN WIDTH: 5.500"  
 REFERENCES: 84360

ALUM.  
 ALLOY

2024

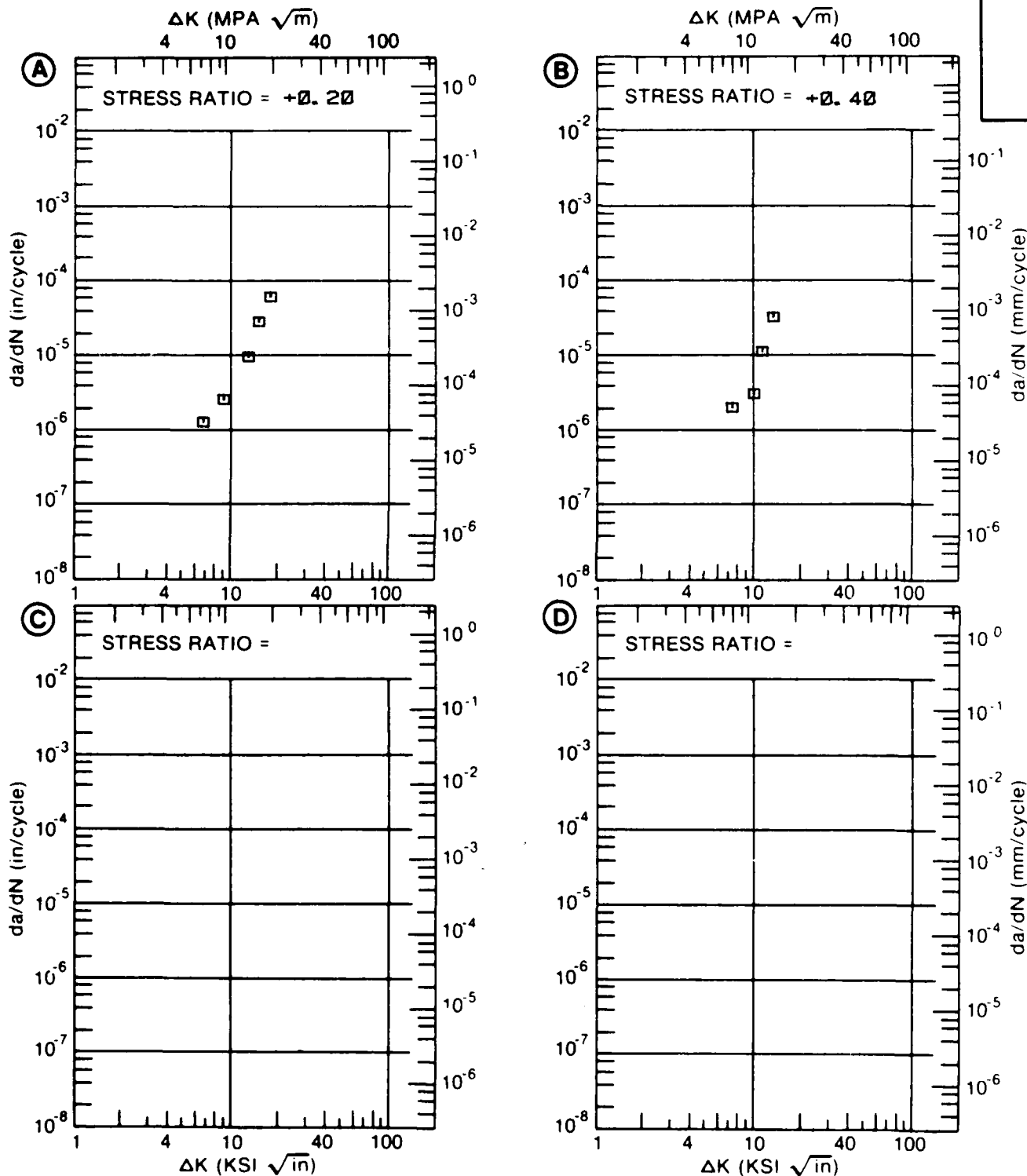


Figure 7.5.3.62

TABLE 7.5.3.63

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.5.3.63 INDICATING EFFECT  
OF ENVIRONMENT

MATERIAL: ALUMINUM		2024			
CONDITION: T851					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		E= R. T. DRY AIR	E= R. T. LAB AIR	E= R. T. JP-4 FUEL	
DELTA K	A:				
MIN	B: 6.40		1.10		
	C: 6.66			.95	
	D:				
	7.00		1.41	1.19	
	8.00		2.04	2.14	
	9.00		2.86	3.50	
	10.00		3.92	5.36	
	13.00		9.28	14.4	
	16.00		20.6	29.3	
	20.00		57.0	58.8	
	25.00		192.	109.	
DELTA K	A:				
MAX	B: 25.87		236.		
	C: 29.26			162.	
	D:				
ROOT MEAN SQUARE		0.00	78.83	32.26	
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25				
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				



CONDITION/HT. T851  
 FORM 2.00- 3.00" TH PLATE  
 SPECIMEN TYPE DCB  
 ORIENTATION L-T  
 STRESS RATIO +0.02  
 FREQUENCY 1.00- 10.00 HZ

YIELD STRENGTH: 59.0- 64.0 KSI  
 ULT. STRENGTH: 66.0- 71.0 KSI  
 SPECIMEN THK: 0.750- 1.000"  
 SPECIMEN WIDTH: 5.500"  
 REFERENCES: 84360

ALUM.  
 ALLOY

2024

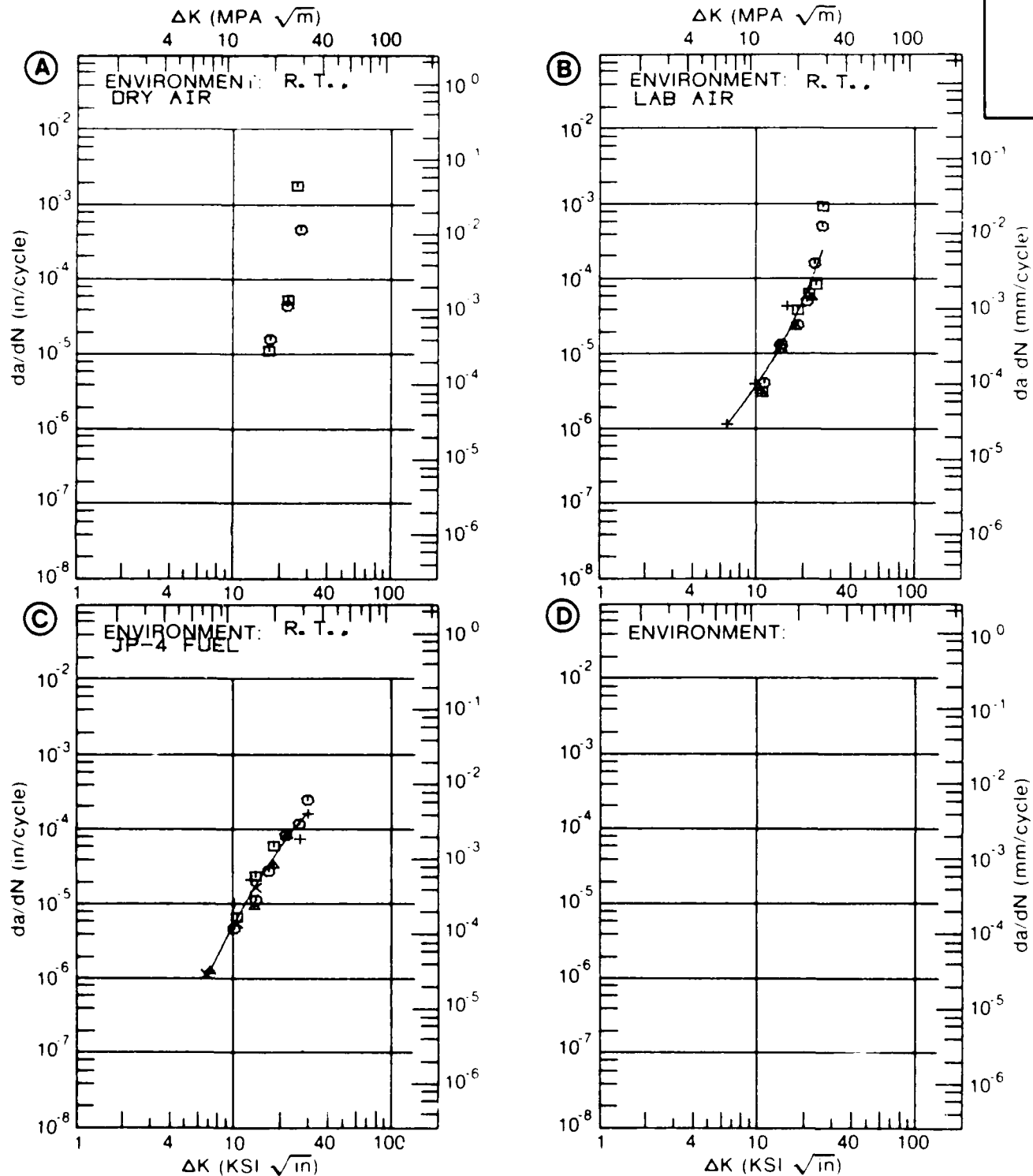


Figure 7.5.3.63

TABLE 7.5.3.64

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.5.3.64 INDICATING EFFECT

OF ENVIRONMENT

MATERIAL: ALUMINUM		2024			
CONDITION: T851					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R. T. 3. 5% NACL	E= R. T. SIMULATED FUEL		
DELTA K A:	9. 58	6. 74			
MIN B:	9. 62		5. 14		
C:					
D:					
	10. 00	7. 28	6. 23		
	13. 00	14. 8	16. 7		
	16. 00	31. 5	34. 4		
	20. 00	74. 2			
DELTA K A:	24. 72	156.			
MAX B:	19. 61		97. 2		
C:					
D:					
ROOT MEAN SQUARE		37. 42	22. 28		
PERCENT ERROR					
LIFE	0. 0-0. 5				
PREDICTION	0. 5-0. 8				
RATIO	0. 8-1. 25				
SUMMARY	1. 25-2. 0				
(NP/NA)	>2. 0				

CONDITION/HT: T851  
 FORM: 2.00- 3.00" TH PLATE  
 SPECIMEN TYPE: DCB  
 ORIENTATION: L-T  
 STRESS RATIO: +0.02  
 FREQUENCY: 1.00- 10.00 HZ

YIELD STRENGTH: 59.0- 64.0 KSI  
 ULT. STRENGTH: 66.0- 71.0 KSI  
 SPECIMEN THK: 0.625- 0.875"  
 SPECIMEN WIDTH: 5.500"  
 REFERENCES: 84360

ALUM.  
 ALLOY

2024

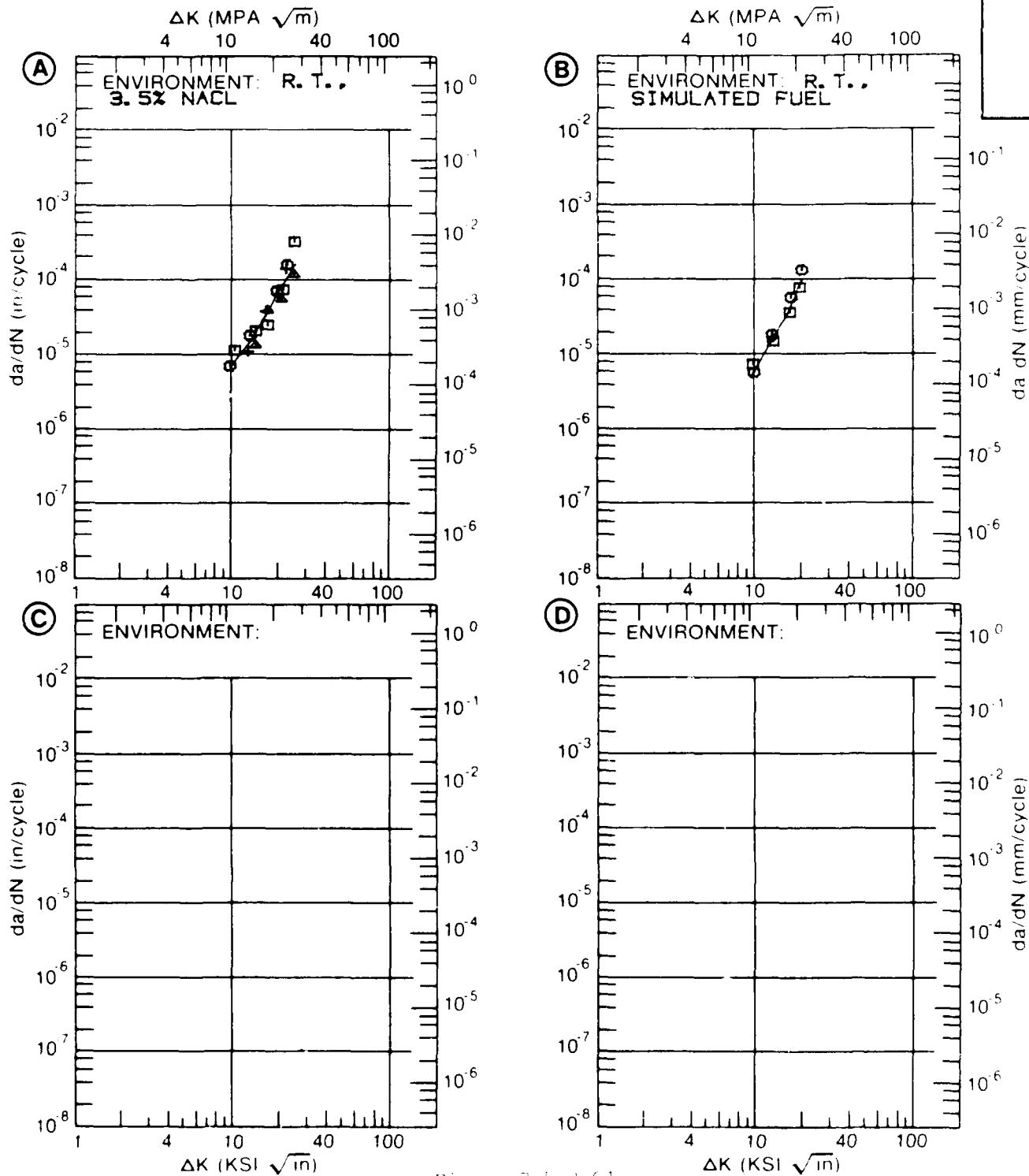


Figure 7.5.3.64

TABLE 7.5.3.65

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.5.3.65 INDICATING EFFECT

OF STRESS RATIO

MATERIAL: ALUMINUM 2024  
CONDITION: T851  
ENVIRONMENT: R. T. , L. H. A.

DELTA K  
(KSI\*IN\*\*1/2)

DA/DN (10\*\*-6 IN. /CYCLE)

A

B

C

D

R=+0.08

DELTA K A: 6.45  
MIN B:  
C:  
D:

7.00 : 2.06  
8.00 : 4.10  
9.00 : 6.40  
10.00 : 8.93  
13.00 : 22.1  
16.00 : 74.3

DELTA K A: 16.92  
MAX B:  
C:  
D:

140.

ROOT MEAN SQUARE 17.92  
PERCENT ERROR

LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25  
SUMMARY 1.25-2.0  
(NP/NA) >2.0

2

CONDITION/HT: T851  
 FORM: 3.00" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 FREQUENCY: 6.00 HZ  
 ENVIRONMENT: R. T., L. H. A.

YIELD STRENGTH: 51.0- 66.0 KSI  
 ULT. STRENGTH: 71.0 KSI  
 SPECIMEN THK: 0.990- 1.000"  
 SPECIMEN WIDTH: 5.990- 6.010"  
 REFERENCES 88579

ALUM.  
 ALLOY

2024

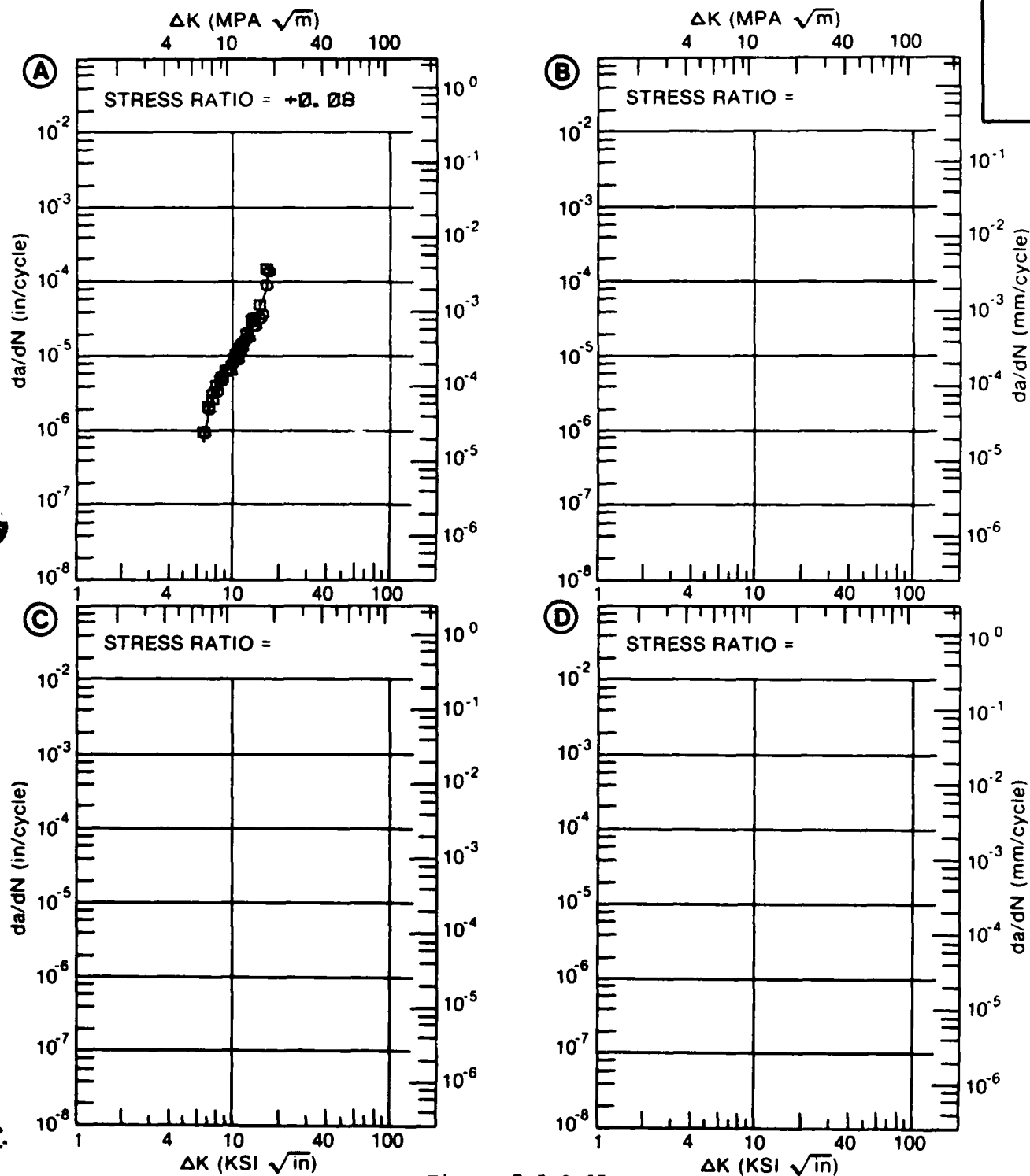


Figure 7.5.3.65

TABLE 7.5.3.66

**FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR**

**DATA ASSOCIATED WITH FIGURE 7.5.3.66 INDICATING EFFECT  
OF STRESS RATIO**

MATERIAL: ALUMINUM		2024				
CONDITION: T851						
ENVIRONMENT: R. T. , L. H. A.						
DELTA K			DA/DN (10** <sup>-6</sup> IN. /CYCLE)			
(KSI*IN**1/2)			A	B	C	D
			R=+0.08			
DELTA K MIN	A:	7.09	1.36			
	B:					
	C:					
	D:					
		8.00	2.39			
		9.00	3.81			
		10.00	5.52			
		13.00	12.5			
		16.00	24.4			
DELTA K MAX	A:	19.44	52.0			
	B:					
	C:					
	D:					
ROOT MEAN SQUARE		5.86				
PERCENT ERROR						
LIFE	0.0-0.5					
PREDICTION	0.5-0.8					
RATIO	0.8-1.25	1				
SUMMARY	1.25-2.0					
(NP/NA)	>2.0					

CONDITION/HT: T851  
 FORM: 3.00" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 FREQUENCY: 1.00 HZ  
 ENVIRONMENT: R. T., L. H. A.

YIELD STRENGTH: 66.0 KSI  
 ULT. STRENGTH: 71.0 KSI  
 SPECIMEN THK: 0.494"  
 SPECIMEN WIDTH: 6.000"  
 REFERENCES: 85837

ALUM.  
 ALLOY

2024

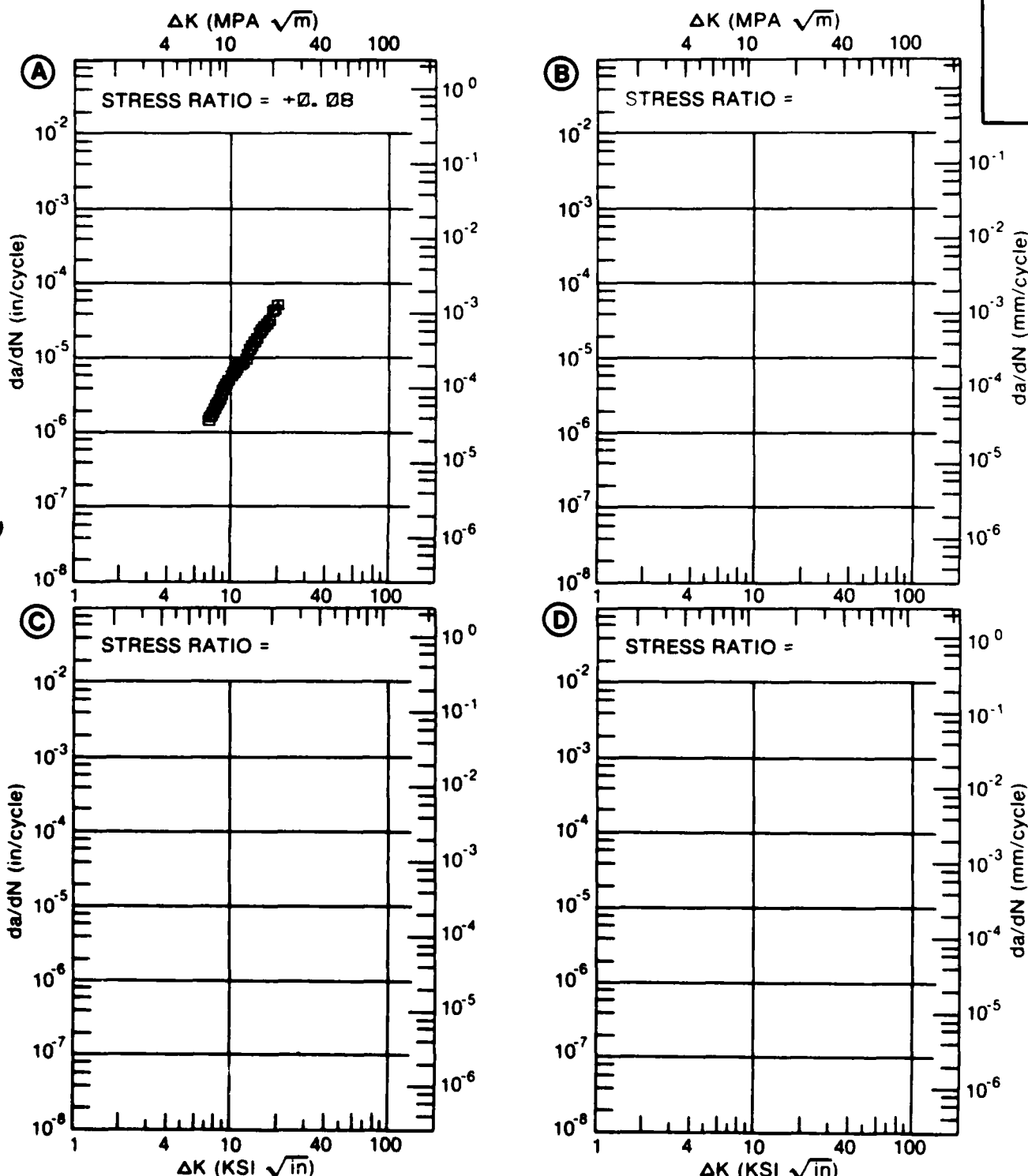


Figure 7.5.3.66

TABLE 7.5.3.67

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.5.3.67 INDICATING EFFECT

OF STRESS RATIO

MATERIAL: ALUMINUM 2024  
CONDITION: T851  
ENVIRONMENT: R. T. , L. H. A.

DELTA K  
(KSI\*IN\*\*1/2)

DA/DN (10\*\*-6 IN. /CYCLE)

A

B

C

D

R=+0.30

DELTA K A: 6.19 :  
MIN B: :  
C: :  
D: :

2.25

7.00 : 3.42  
8.00 : 5.46  
9.00 : 8.45  
10.00 : 12.9

DELTA K A: 12.46 :  
MAX B: :  
C: :  
D: :

36.2

ROOT MEAN SQUARE 11.31  
PERCENT ERROR

LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25  
SUMMARY 1.25-2.0  
(NP/NA) >2.0

1



CONDITION/HT: T851  
 FORM: 3.00" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 FREQUENCY: 1.00 HZ  
 ENVIRONMENT: R. T., L. H. A.

YIELD STRENGTH: 86.0 KSI  
 ULT. STRENGTH: 71.0 KSI  
 SPECIMEN THK: 1.000"  
 SPECIMEN WIDTH: 6.000"  
 REFERENCES 98579

ALUM.  
ALLOY

2024

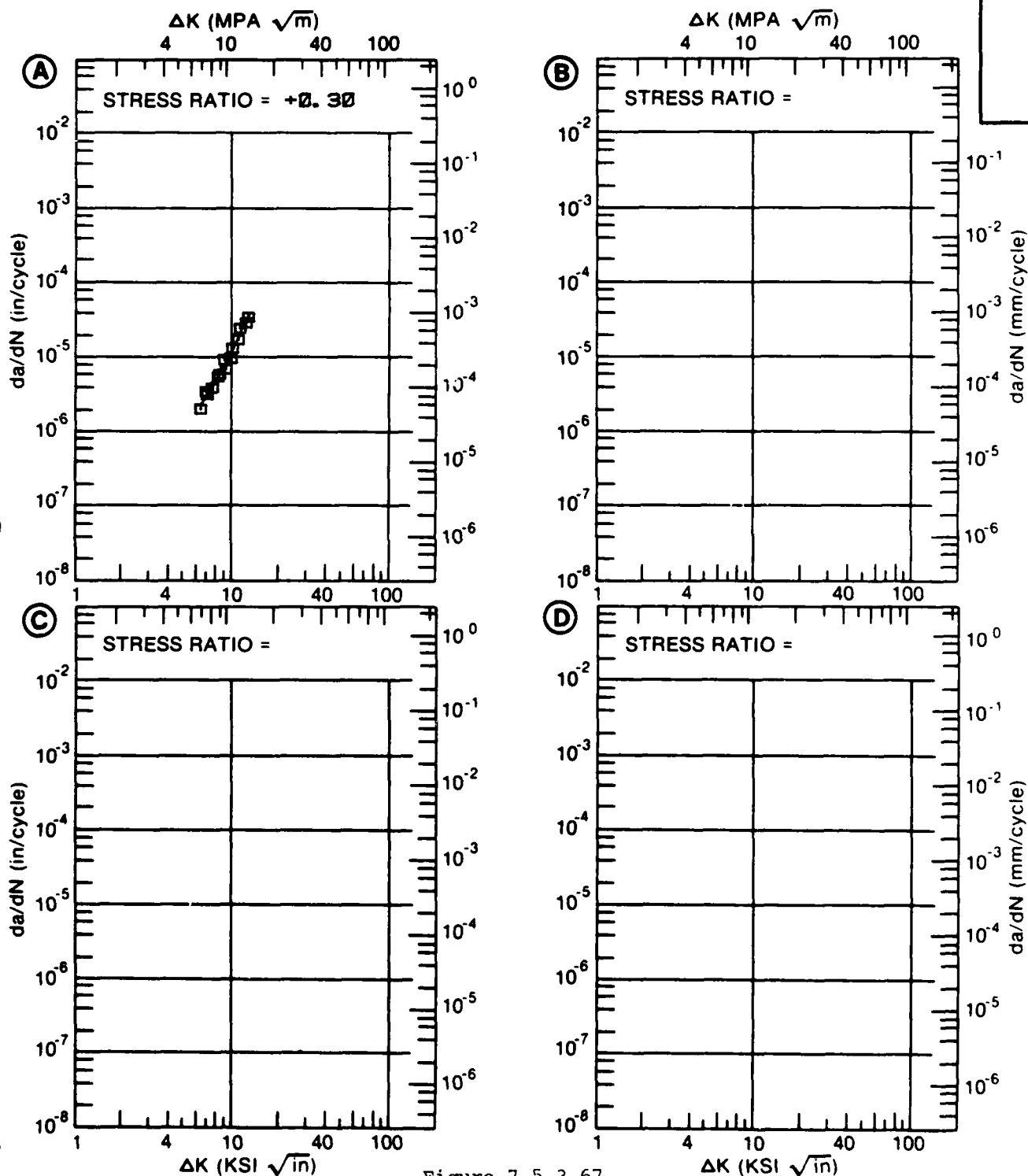


Figure 7.5.3.67

TABLE 7.5.3.68

**FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR**

**DATA ASSOCIATED WITH FIGURE 7.5.3.68 INDICATING EFFECT**

**OF ENVIRONMENT**

**MATERIAL: ALUMINUM  
CONDITION: T851**

**2024**

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R. T. L. H. A.	E= R. T. J. P. 4	E= R. T. DIST. H2O	E= R. T. S. T. W.
DELTA K	A: 7.16	1.75			
MIN	B: 5.85		.987		
	C: 5.87			1.51	
	D: 7.37				2.71
	6.00		1.13	1.57	
	7.00		2.38	2.43	
	8.00	2.99	4.06	3.79	3.52
	9.00	4.91	6.12	5.22	5.34
	10.00	7.27	8.55	6.99	7.92
	13.00	17.4	19.	23.0	19.8
	16.00	34.8	39.5	112.	35.6
	20.00		108.		112.
DELTA K	A: 19.69	78.9			
MAX	B: 21.48		241.		
	C: 16.35			211.	
	D: 22.77				415.
ROOT MEAN SQUARE		15.20	10.17	21.77	15.52
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25	2	1	1	2
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION/HT: T851  
 FORM: 3.00" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 STRESS RATIO: +0.08  
 FREQUENCY: 1.00 HZ

YIELD STRENGTH: 59.0- 66.0 KSI  
 ULT. STRENGTH: 71.0- 74.0 KSI  
 SPECIMEN THK: 0.990- 1.000"  
 SPECIMEN WIDTH: 5.990- 6.000"  
 REFERENCES: 88579

ALUM.  
 ALLOY

2024

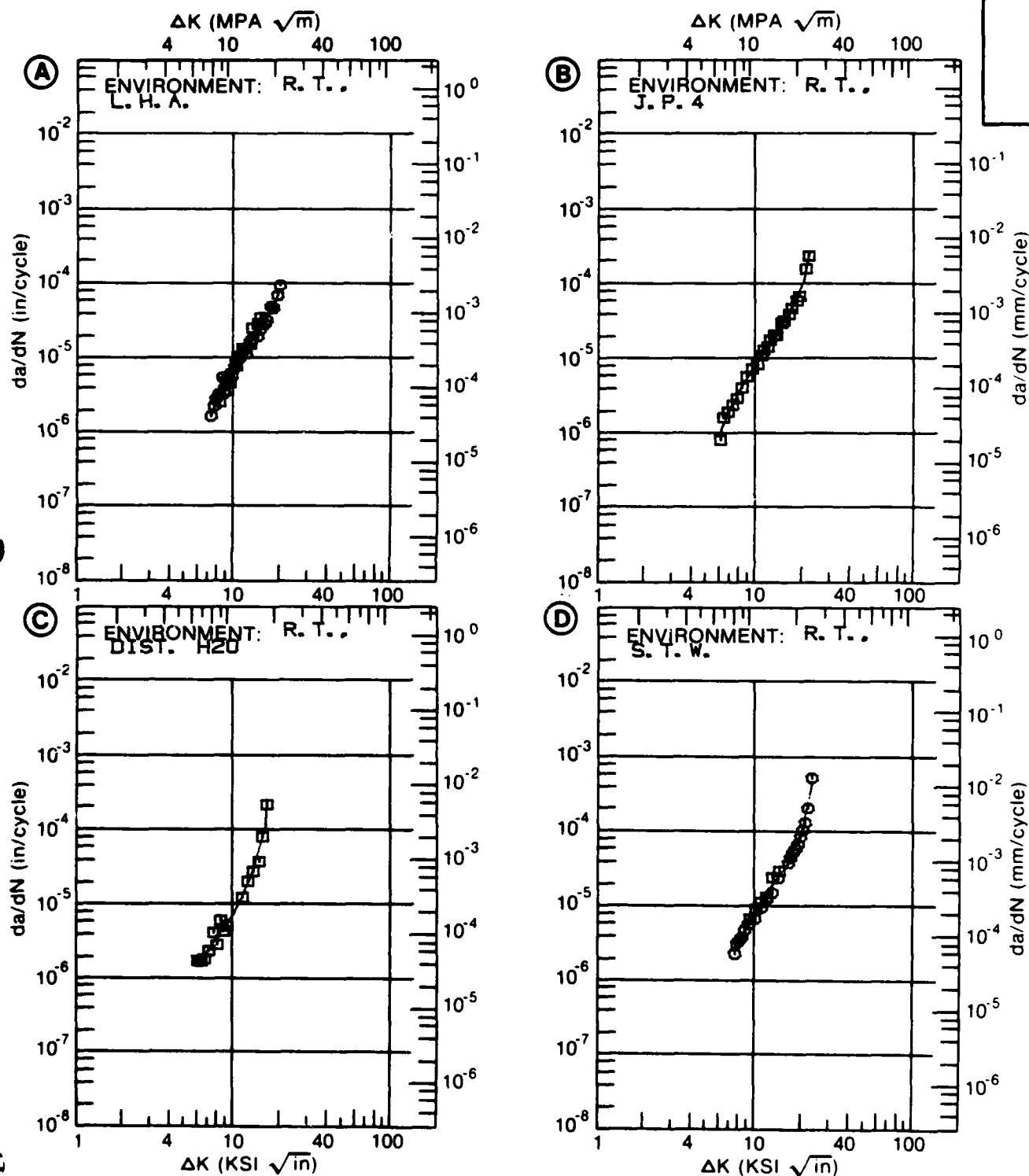


Figure 7.5.3.68

TABLE 7.5.3.69

**FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR**

**DATA ASSOCIATED WITH FIGURE 7.5.3.69 INDICATING EFFECT  
OF FREQUENCY**

MATERIAL: ALUMINUM 2024  
CONDITION: T851  
ENVIRONMENT: R. T. , L. H. A.

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		F(HZ)= 1.00	F(HZ)= 6.00		
DELTA K MIN	A:	9.67	4.65		
	B:	6.86	1.67		
	C:				
	D:				
	7.00		1.92		
	8.00		4.12		
	9.00		6.66		
	10.00	5.90	9.45		
	13.00	17.6	24.5		
	16.00	50.2			
DELTA K MAX	A:	16.70	72.4		
	B:	15.93	88.2		
	C:				
	D:				
ROOT MEAN SQUARE		13.07	13.08		
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25	1	1		
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION/HT: T851  
 FORM: 3.00" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: T-L  
 STRESS RATIO: +0.08  
 ENVIRONMENT: R. T., L. H. A.

YIELD STRENGTH: 65.0 KSI  
 ULT. STRENGTH: 71.0 KSI  
 SPECIMEN THK: 1.000"  
 SPECIMEN WIDTH: 5.990- 6.000"  
 REFERENCES: 88579

ALUM.  
 ALLOY

2024

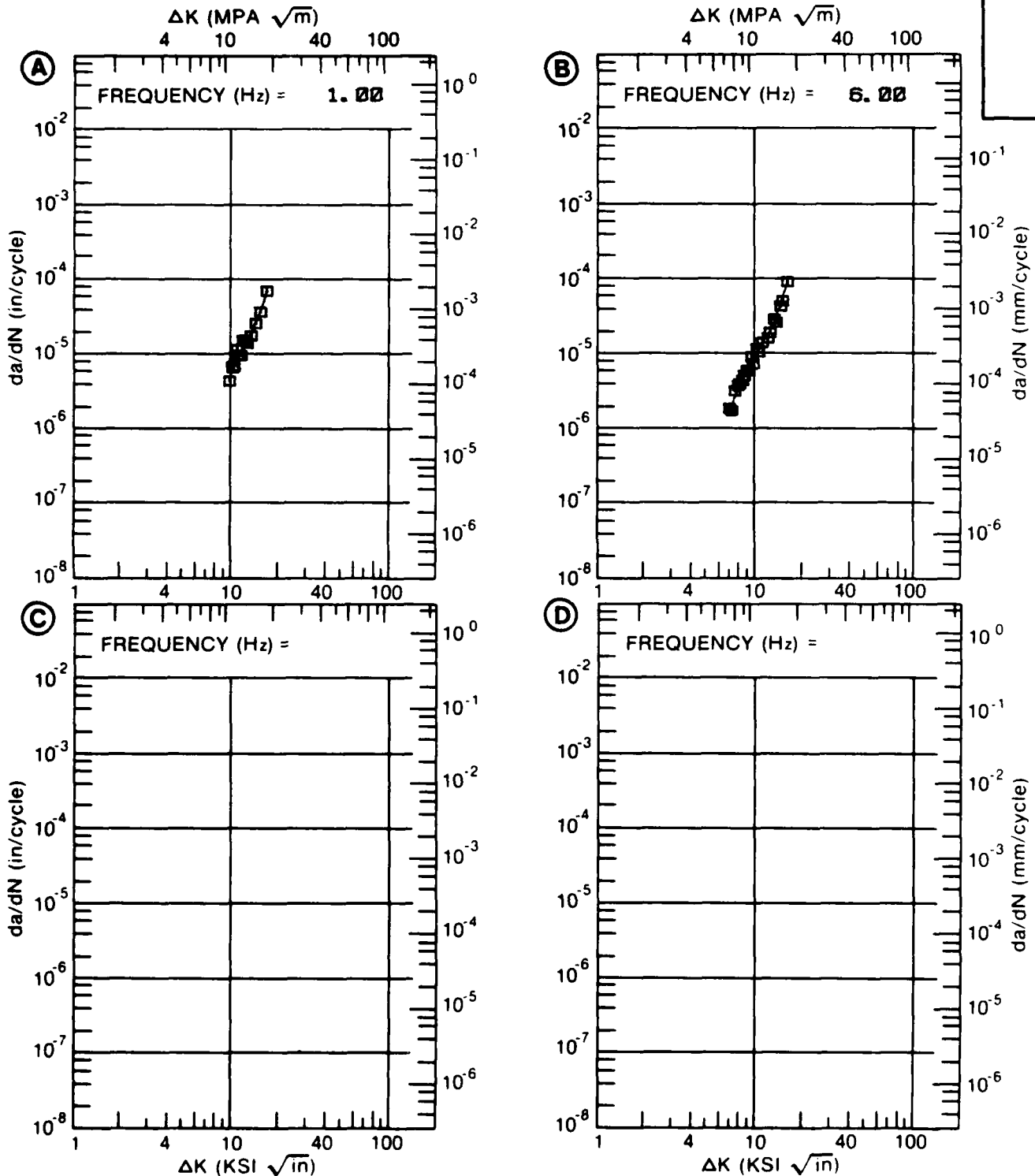


Figure 7.5.3.69

TABLE 7.5.3.70

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.5.3.70 INDICATING EFFECT

OF STRESS RATIO

MATERIAL: ALUMINUM		2024			
CONDITION: T851					
ENVIRONMENT: R. T. , 3.5% NaCl					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		R=+0.10			
DELTA K MIN	A:	8.35	9.90		
	B:				
	C:				
	D:				
		9.00	10.5		
		10.00	18.2		
		13.00	62.2		
DELTA K MAX	A:	14.30	228.		
	B:				
	C:				
	D:				
ROOT MEAN SQUARE		38.36			
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8	2			
RATIO	0.8-1.25	1			
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION/HT: T851  
 FORM: 4.00" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: T-L  
 FREQUENCY: 0.10- 10.00 HZ  
 ENVIRONMENT: R. T., 3.5% NaCl

YIELD STRENGTH: 64.6 KSI  
 ULT. STRENGTH: 71.3 KSI  
 SPECIMEN THK: 1.000"  
 SPECIMEN WIDTH: 2.550"  
 REFERENCES: 90981

ALUM.  
 ALLOY

2024

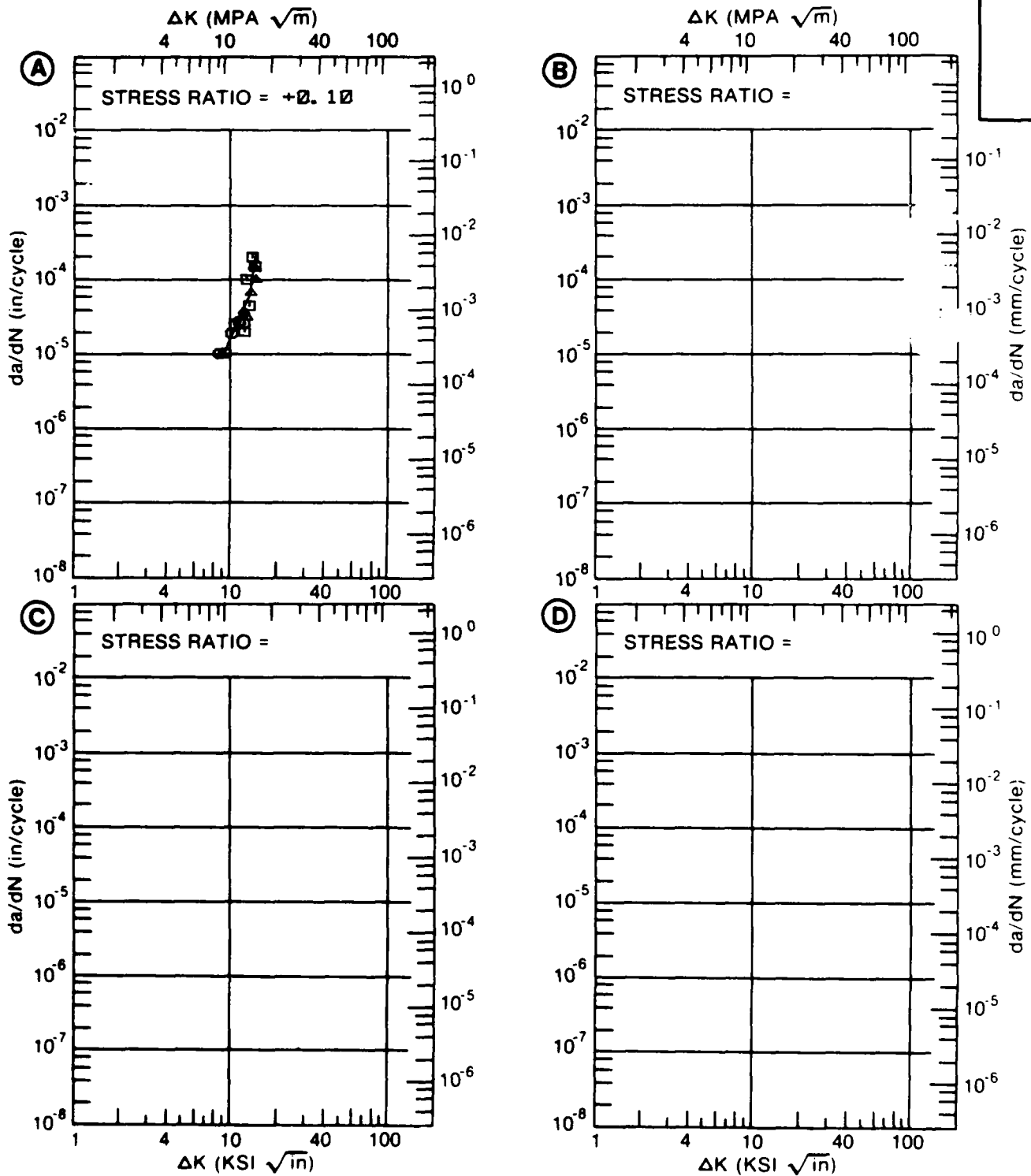


Figure 7.5.3.70

TABLE 7.5.3.71

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTORDATA ASSOCIATED WITH FIGURE 7.5.3.71 INDICATING EFFECT  
OF STRESS RATIO

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MATERIAL: ALUMINUM 2024  
CONDITION: T852  
ENVIRONMENT: R. T. , L. H. A.

---

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		R=+0.08			
DELTA K MIN	A: 5.43	1.19			
	B:				
	C:				
	D:				
	6.00	1.36			
	7.00	1.74			
	8.00	2.25			
	9.00	2.91			
	10.00	3.72			
	13.00	7.43			
DELTA K MAX	16.00	13.6			
	20.00	27.4			
	A: 21.81	36.3			
	B:				
	C:				
	D:				

---

ROOT MEAN SQUARE 19.83  
PERCENT ERROR

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LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25 3  
SUMMARY 1.25-2.0  
(NP/NA) >2.0

---



CONDITION/HT: T852  
 FORM: 3.00" TH FORGING  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 FREQUENCY: 6.00 HZ  
 ENVIRONMENT: R. T., L. H. A.

YIELD STRENGTH: 53.0 KSI  
 ULT. STRENGTH: 68.0- 70.0 KSI  
 SPECIMEN THK: 0.250- 0.502"  
 SPECIMEN WIDTH: 7.400"  
 REFERENCES: 88579, 85837

ALUM.  
 ALLOY

2024

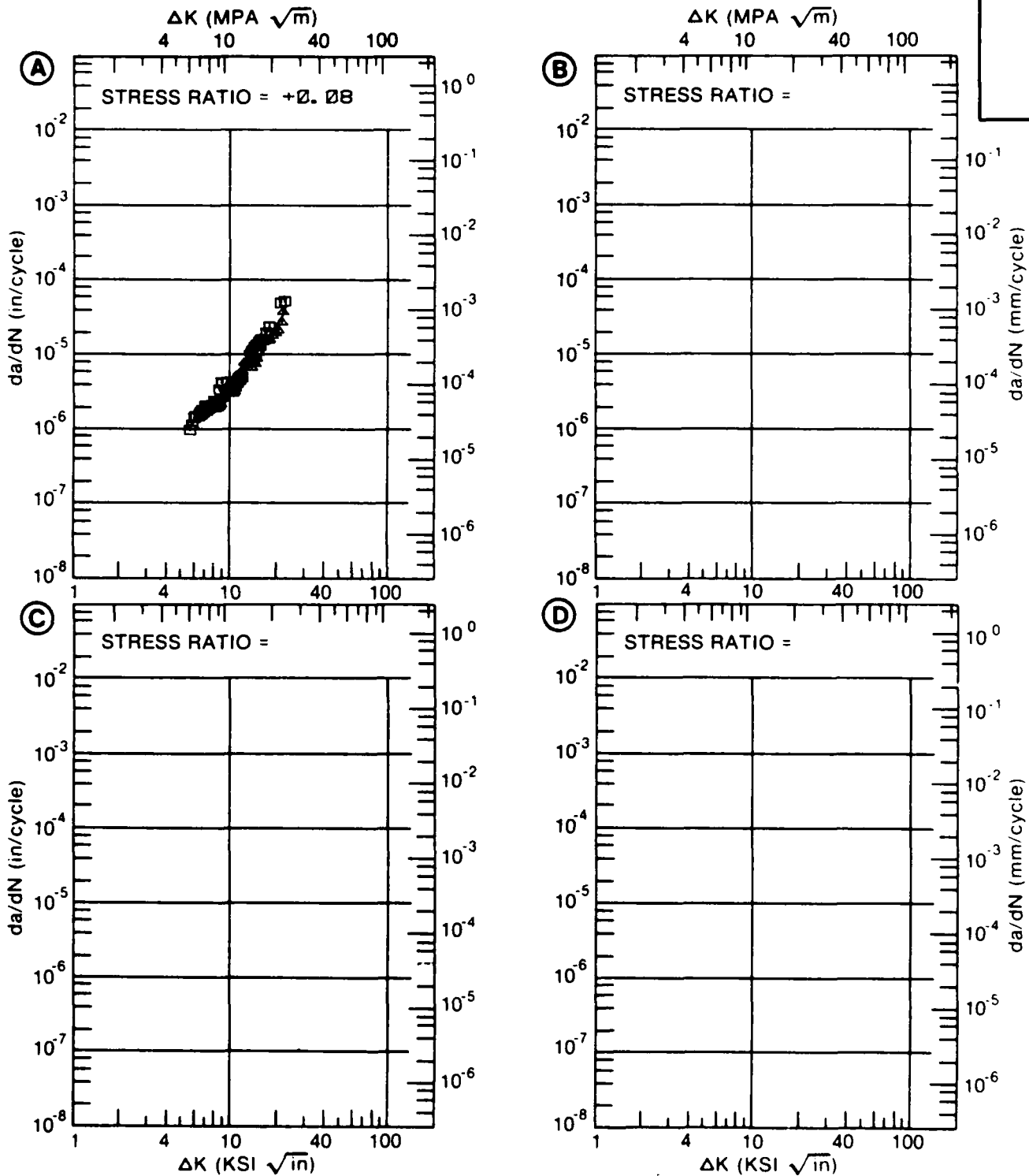


Figure 7.5.3.71

TABLE 7.5.3.72

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.5.3.72 INDICATING EFFECT

OF ENVIRONMENT

MATERIAL: ALUMINUM 2024  
CONDITION: T852

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		E= R. T. S. C. S.			
DELTA K MIN	A:	4.09	.688		
	B:				
	C:				
	D:				
	5.00	1.69			
	6.00	2.36			
DELTA K MAX	7.00	3.49			
	8.00	5.12			
	9.00	7.30			
	10.00	9.98			
	13.00	19.8			
	A:	14.86	25.5		
DELTA K MAX	B:				
	C:				
	D:				

ROOT MEAN SQUARE 9.72  
PERCENT ERROR

LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25 1  
SUMMARY 1.25-2.0  
(NP/NA) >2.0

CONDITION/HT: T852  
 FORM: 3.00" TH FORGING  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 STRESS RATIO: +0.08  
 FREQUENCY: 1.00 HZ

YIELD STRENGTH: 53.0 KSI  
 ULT. STRENGTH: 70.0 KSI  
 SPECIMEN THK: 1.004"  
 SPECIMEN WIDTH: 7.400"  
 REFERENCES: 85837

ALUM.  
 ALLOY

2024

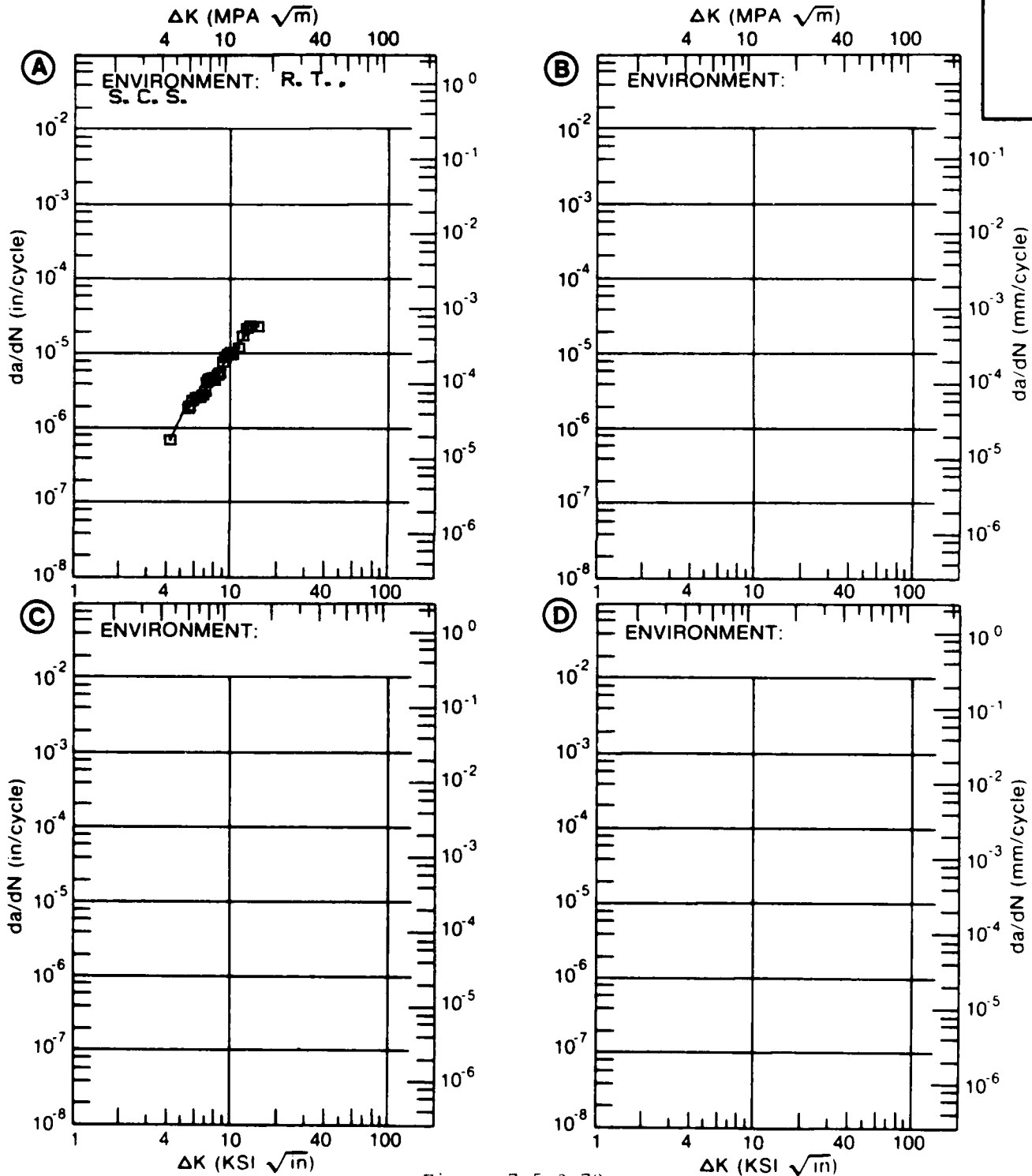


Figure 7.5.3.72

TABLE 7.5.3.73

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.5.3.73 INDICATING EFFECT

OF FREQUENCY

MATERIAL: ALUMINUM 2024  
CONDITION: T852  
ENVIRONMENT: R. T. , L. H. A.

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		F(HZ)= 0.10 F(HZ)= 1.00			
DELTA K MIN	A: 6.91	1.57			
	B: 3.80		.373		
	C:				
	D:				
	4.00		.462		
	5.00		1.06		
	6.00		1.94		
	7.00	1.65	3.14		
	8.00	2.73	4.75		
	9.00	4.12	6.90		
DELTA K MAX	10.00	5.88	9.81		
	13.00	14.7	26.3		
	16.00	34.4			
	A: 16.31	37.6			
	B: 14.60		43.9		
	C:				
	D:				
ROOT MEAN SQUARE PERCENT ERROR		6.74	17.41		

LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25  
SUMMARY 1.25-2.0  
(NP/NA) >2.0

1

1

CONDITION/HT: T852  
 FORM: 3.00" TH FORGING  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 STRESS RATIO: +0.08  
 ENVIRONMENT: R. T., L. H. A.

YIELD STRENGTH: 53.0 KSI  
 ULT. STRENGTH: 70.0 KSI  
 SPECIMEN THK: 1.000- 1.002"  
 SPECIMEN WIDTH: 7.400"  
 REFERENCES: 85837

ALUM.  
 ALLOY

2024

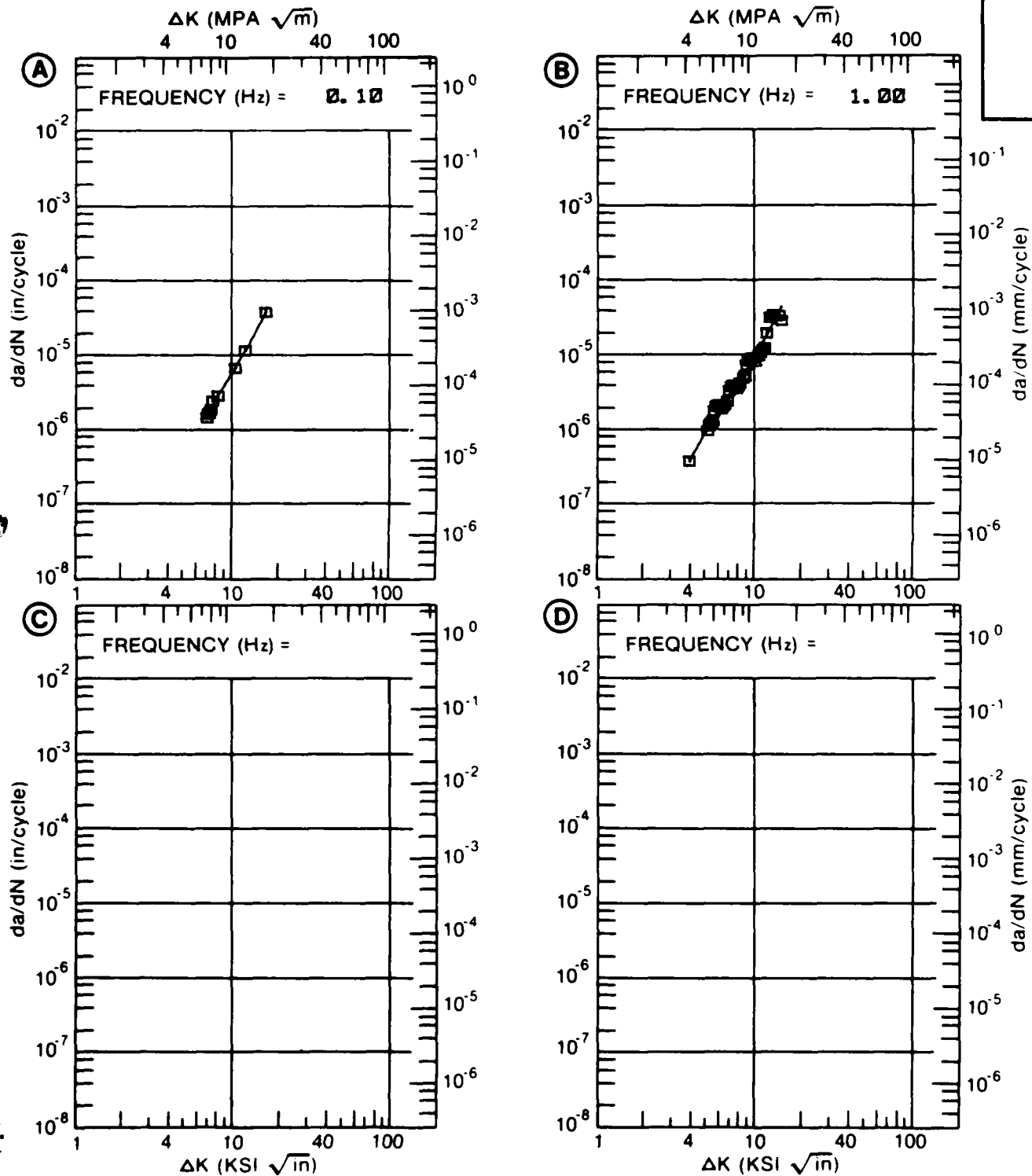


Figure 7.5.3.73

TABLE 7.5.3.74

**FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR**

**DATA ASSOCIATED WITH FIGURE 7.5.3.74 INDICATING EFFECT  
OF ENVIRONMENT**

MATERIAL: ALUMINUM 2024  
CONDITION: T852

DELTA K  
(KSI\*IN\*\*1/2)

DA/DN (10\*\*-6 IN. /CYCLE)

A

B

C

D

E=+ 265F

L. H. A

DELTA K A: 6.27 : 1.60  
B:  
MIN C:  
D:

7.00 : 2.50  
8.00 : 4.25  
9.00 : 6.77  
10.00 : 10.3  
13.00 : 29.2  
16.00 : 74.9

DELTA K A: 17.44 : 155.  
B:  
MAX C:  
D:

ROOT MEAN SQUARE 15.22  
PERCENT ERROR

LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25 1  
SUMMARY 1.25-2.0  
(NP/NA) >2.0

CONDITION/HT: T852  
 FORM: 3.00" TH FORGING  
 SPECIMEN TYPE: CT  
 ORIENTATION: T-L  
 STRESS RATIO: +0.08  
 FREQUENCY: 6.00 HZ

YIELD STRENGTH: 54.0 KSI  
 ULT. STRENGTH: 68.0 KSI  
 SPECIMEN THK: 0.999"  
 SPECIMEN WIDTH: 7.400"  
 REFERENCES: 85837

ALUM.  
ALLOY

2024

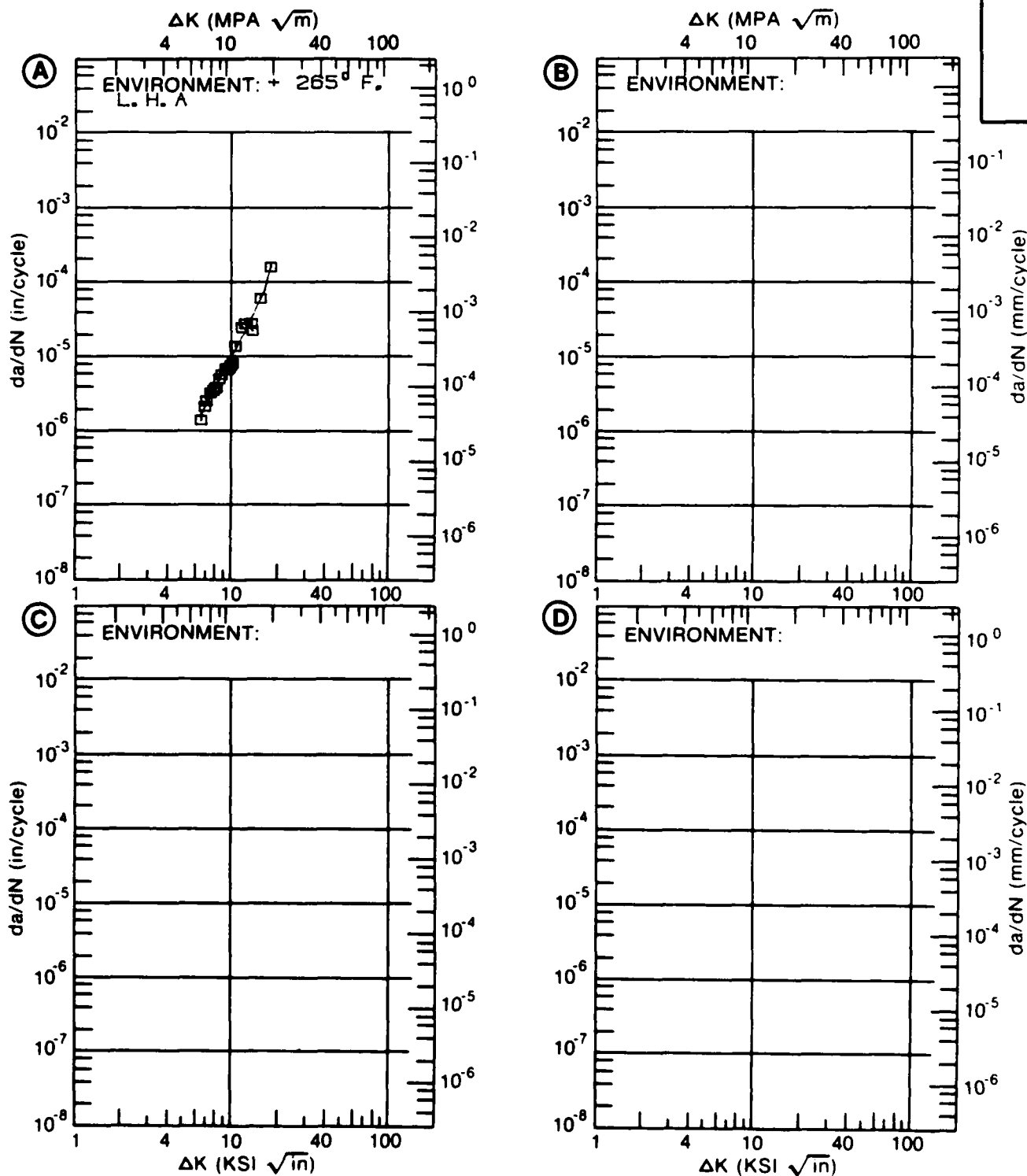


Figure 7.5.3.74

TABLE 7.5.3.75

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.5.3.75 INDICATING EFFECT  
OF ENVIRONMENT

MATERIAL: ALUMINUM		2024			
CONDITION: T852					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		E= R. T.			
		S. T. W.			
DELTA K MIN	A:	8.03	2.81		
	B:				
	C:				
	D:				
		9.00	3.50		
		10.00	5.19		
		13.00	18.5		
DELTA K MAX	A:	15.99	36.5		
	B:				
	C:				
	D:				
ROOT MEAN SQUARE		22.22			
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8	1			
RATIO	0.8-1.25	1			
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				



CONDITION/HT: T852  
 FORM: 3.00" TH FORGING  
 SPECIMEN TYPE: CT  
 ORIENTATION: T-L  
 STRESS RATIO: +0.08  
 FREQUENCY: 1.00 HZ

YIELD STRENGTH: 54.0 KSI  
 ULT. STRENGTH: 68.0 KSI  
 SPECIMEN THK: 0.998- 0.999"  
 SPECIMEN WIDTH: 7.400"  
 REFERENCES: 85837

ALUM.  
 ALLOY

2024

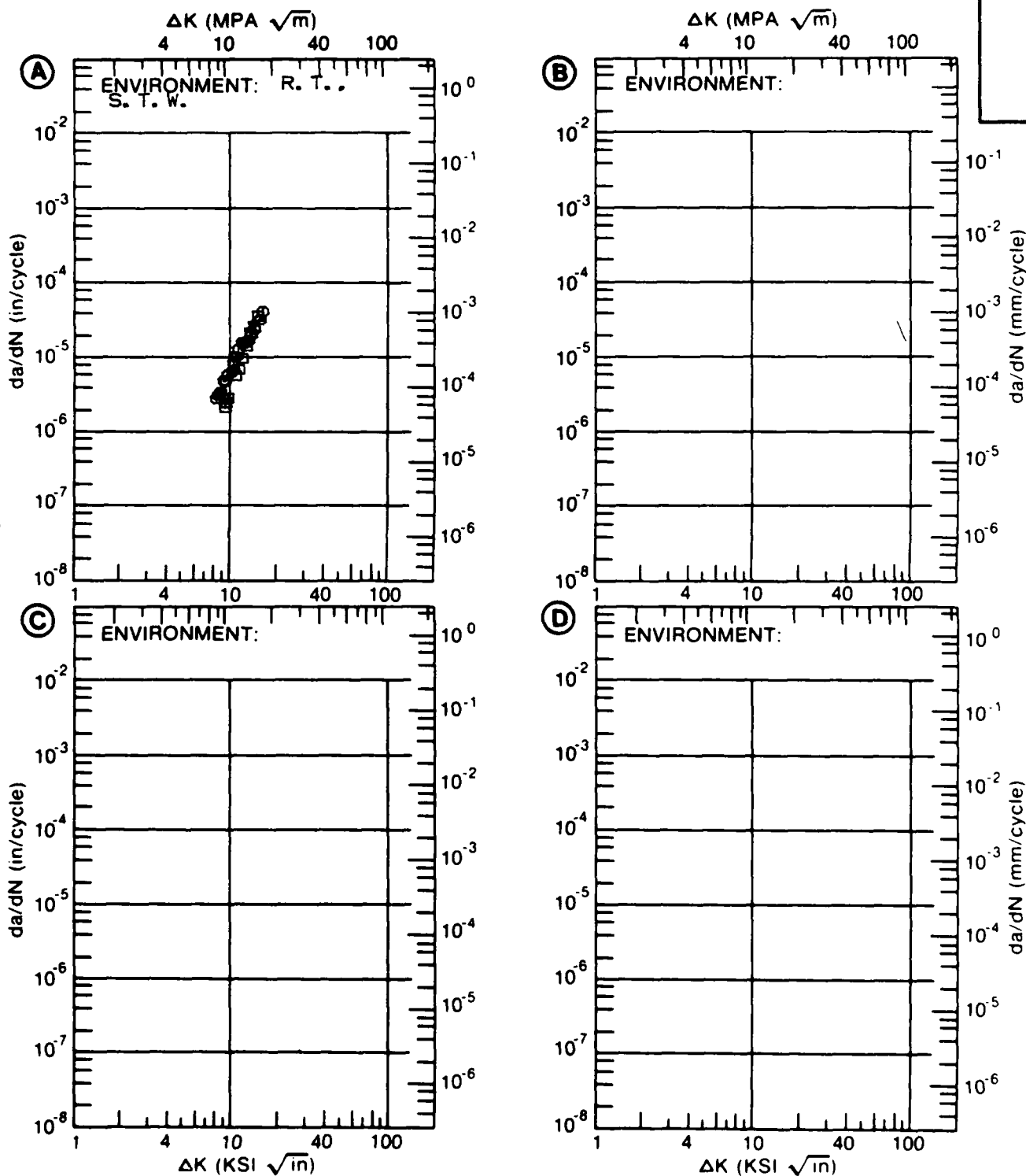


Figure 7.5.3.75

TABLE 7.5.3.76

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.5.3.76 INDICATING EFFECT  
OF STRESS RATIO

MATERIAL: ALUMINUM		2024	
CONDITION: T852			
ENVIRONMENT: R. T. , LAB AIR			
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)	
		A	B
		R=+0.33	
		C	D
DELTA K MIN	A: 6.07	1.26	
	B:		
	C:		
	D:		
	7.00	2.13	
	8.00	3.14	
	9.00	4.25	
	10.00	5.59	
	13.00	13.5	
DELTA K MAX	A: 15.89	39.3	
	B:		
	C:		
	D:		
ROOT MEAN SQUARE		30.64	
PERCENT ERROR			
LIFE	0.0-0.5		
PREDICTION	0.5-0.8	1	
RATIO	0.8-1.25	4	
SUMMARY	1.25-2.0	1	
(NP/NA)	>2.0		

CONDITION/HT: T852  
 FORM: 6.00" TH FORGING  
 SPECIMEN TYPE: CCP  
 ORIENTATION: T-L  
 FREQUENCY: 5.17 HZ  
 ENVIRONMENT: R. T., LAB AIR

YIELD STRENGTH:  
 ULT. STRENGTH:  
 SPECIMEN THK: 0.750"  
 SPECIMEN WIDTH: 3.000"  
 REFERENCES: 77720

ALUM.  
ALLOY

2024

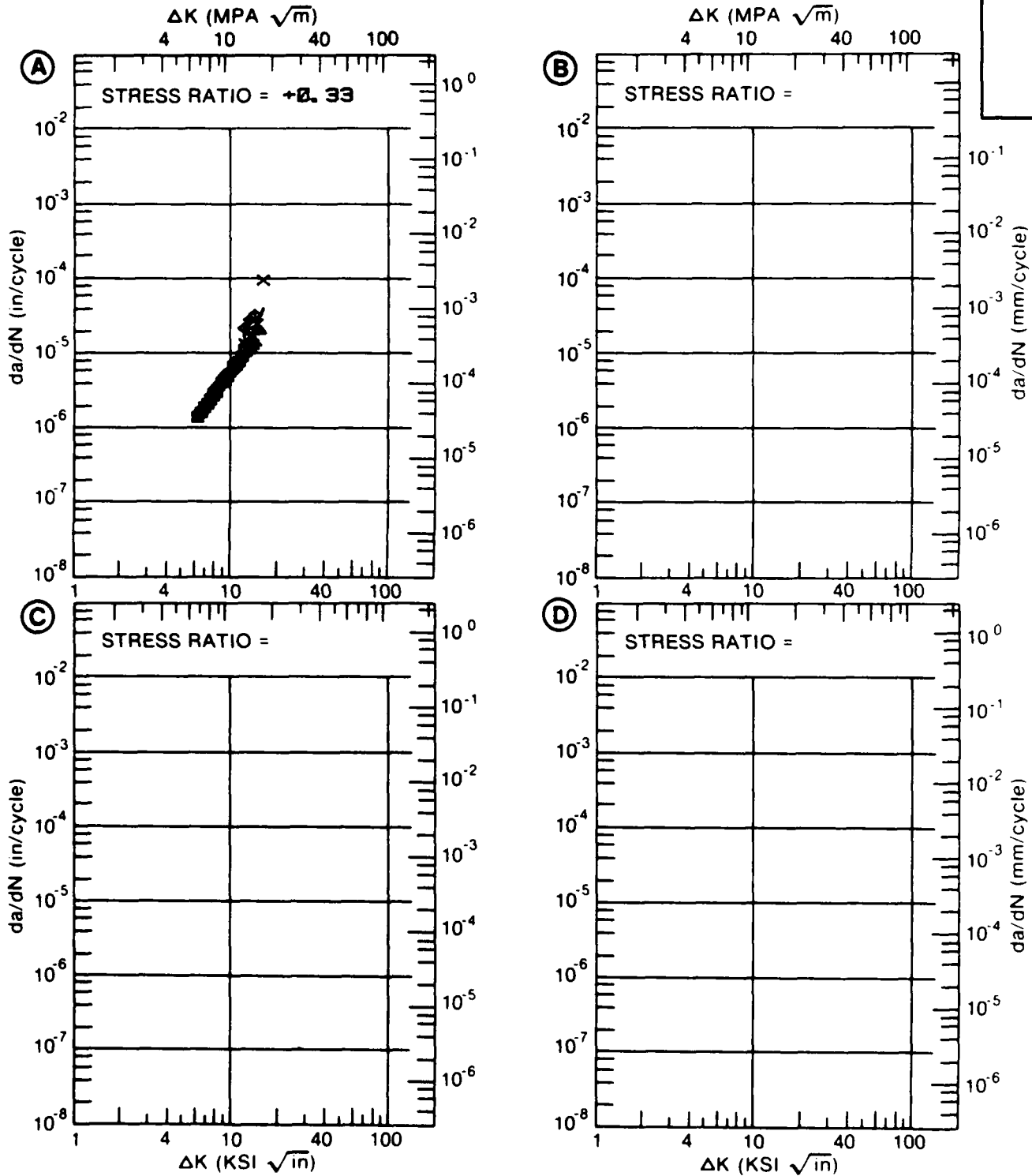


Figure 7.5.3.76

TABLE 7.5.3.77

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.5.3.77 INDICATING EFFECT

OF STRESS RATIO

MATERIAL: ALUMINUM 2024  
CONDITION: TB61  
ENVIRONMENT: R. T. , LAB AIR

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		R=+0.10			
DELTA K MIN	A:	20.67	104.		
	B:				
	C:				
	D:				
		25.00	236.		
		30.00	570.		
		35.00	3094.		
DELTA K MAX	A:	38.64	20484.		
	B:				
	C:				
	D:				

ROOT MEAN SQUARE 31.76  
PERCENT ERROR

LIFE	0.0-0.5	1
PREDICTION	0.5-0.8	4
RATIO	0.8-1.25	3
SUMMARY	1.25-2.0	1
(NP/NA)	>2.0	

CONDITION/HT: T861  
 FORM: 0.02" TH SHEET  
 SPECIMEN TYPE: CT  
 ORIENTATION: T-L  
 FREQUENCY: 0.10- 1.00 HZ  
 ENVIRONMENT: R. T., LAB AIR

YIELD STRENGTH: 65.7 KSI  
 ULT. STRENGTH: 70.8 KSI  
 SPECIMEN THK: 0.020"  
 SPECIMEN WIDTH: 5.000"  
 REFERENCES: 88578

ALUM.  
ALLOY

2024

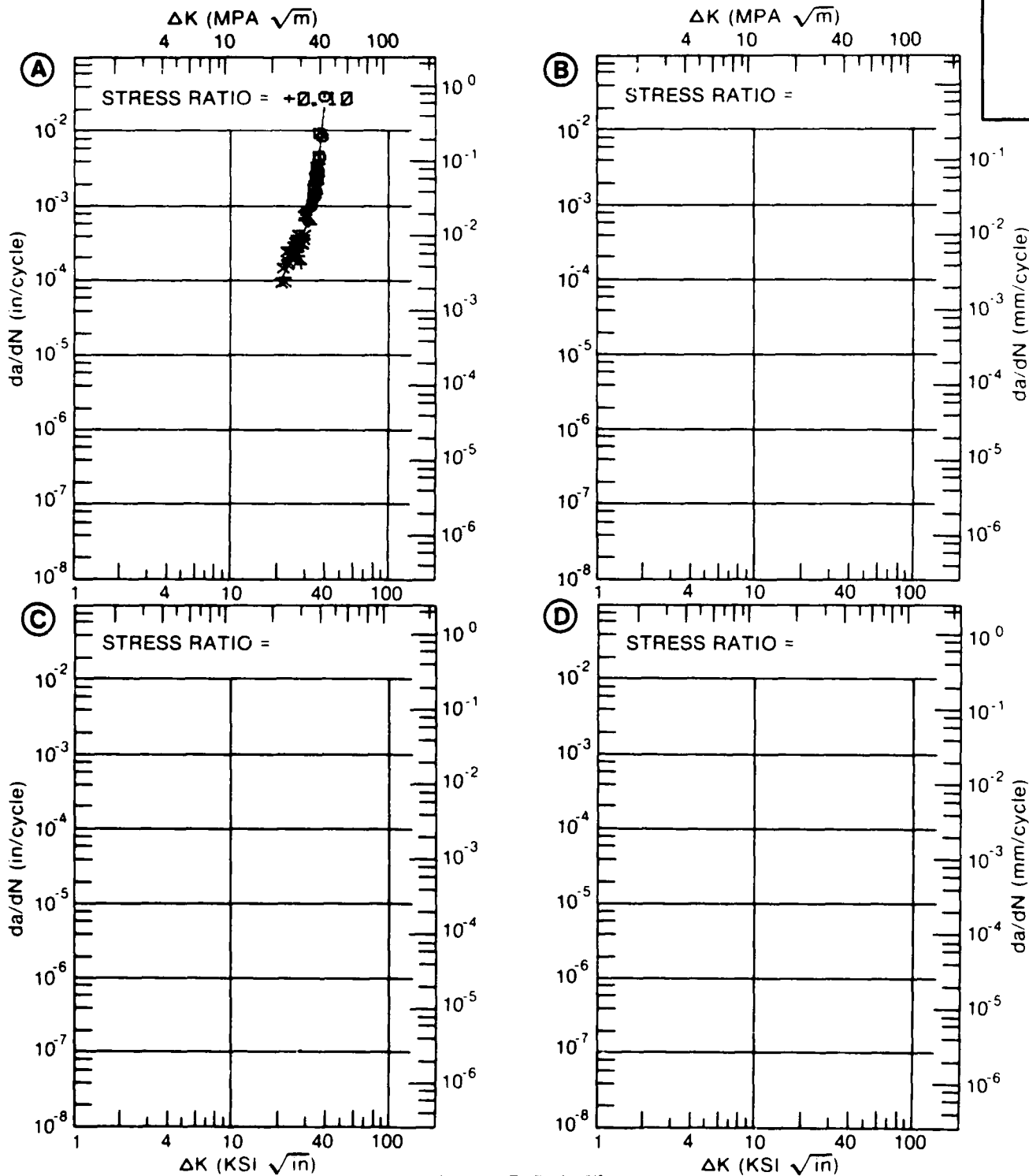


Figure 7.5.3.77

TABLE 7.5.3.78

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.5.3.78 INDICATING EFFECT  
OF FREQUENCY

MATERIAL: ALUMINUM		2024	
CONDITION: T861			
ENVIRONMENT: R. T. , LAB AIR			
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)	
		A	B
		F(HZ)= 2.00-9.00	F(HZ)= 10.00-13.00
DELTA K MIN	A: 8.65	4.75	
	B: 3.38		.438
	C:		
	D:		
	3.50		.463
	4.00		.591
	5.00		.998
	6.00		1.68
	7.00		2.73
	8.00		4.27
	9.00	6.59	6.44
	10.00	8.06	9.37
DELTA K MAX	13.00	17.4	24.1
	16.00	40.3	49.8
	20.00	99.9	
	A: 22.81	156.	
	B: 18.90		86.5
	C:		
	D:		
ROOT MEAN SQUARE		14.48	22.93
PERCENT ERROR			
LIFE	0.0-0.5		
PREDICTION	0.5-0.8		
RATIO	0.8-1.25	4	9
SUMMARY	1.25-2.0		
(NP/NA)	>2.0		

CONDITION/HT: T861  
 FORM: 0.02" TH SHEET  
 SPECIMEN TYPE: CT  
 ORIENTATION: T-L  
 STRESS RATIO: +0.10  
 ENVIRONMENT: R. T., LAB AIR

YIELD STRENGTH: 65.7 KSI  
 ULT. STRENGTH: 70.8 KSI  
 SPECIMEN THK: 0.020"  
 SPECIMEN WIDTH: 5.000"  
 REFERENCES: 88578

ALUM.  
 ALLOY

2024

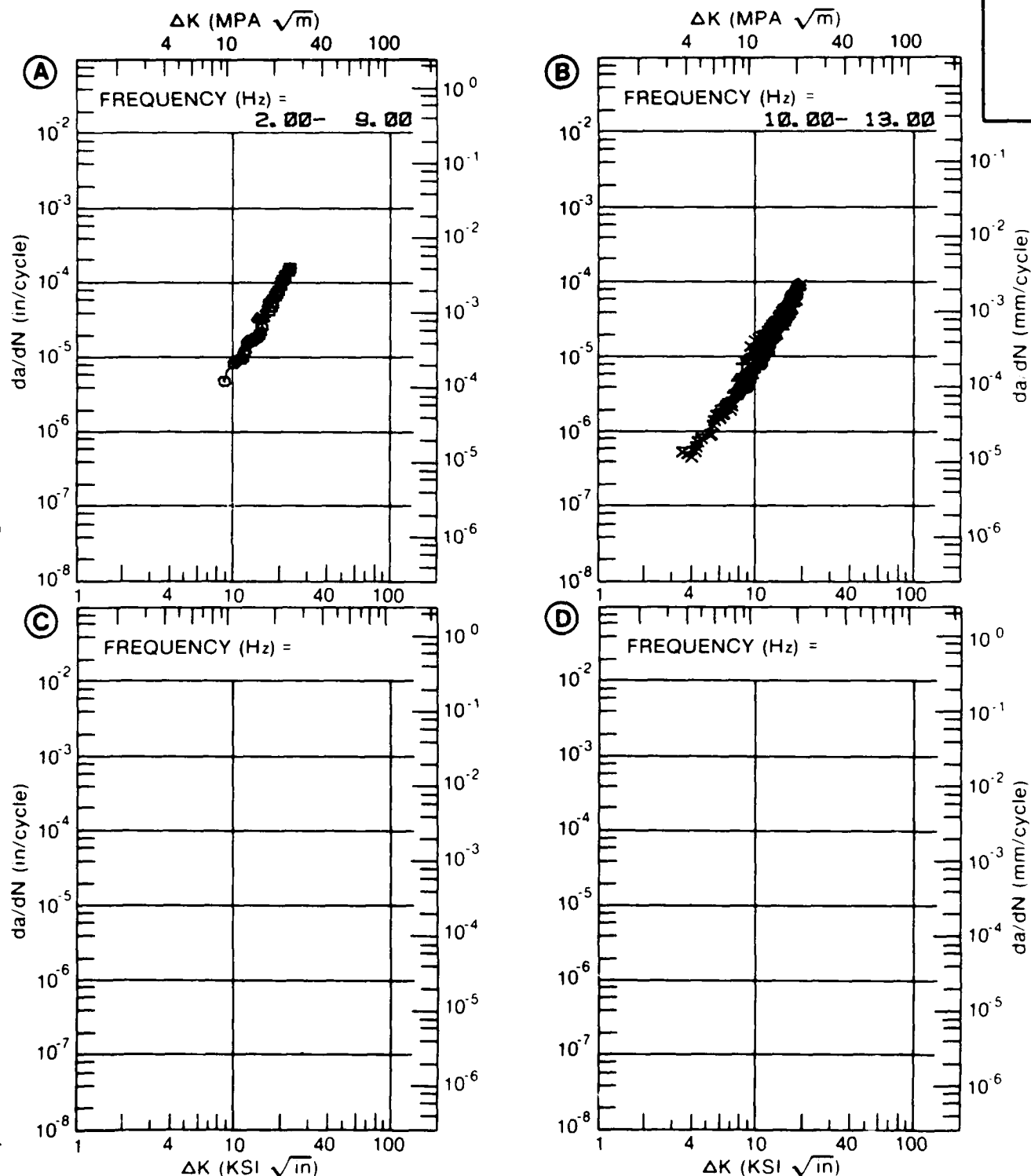


Figure 7.5.3.78

TABLE 7.5.3.79

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.5.3.79 INDICATING EFFECT

OF STRESS RATIO

MATERIAL: ALUMINUM		2024	
CONDITION: T861			
ENVIRONMENT: R. T. , LAB AIR			
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)	
		A	B
		R=+0.08	R=+0.10
A: 4.55		.48	
DELTA K B:			
MIN C:			
D:			
5.00		.710	
6.00		1.40	
7.00		2.41	
8.00		3.87	
9.00		5.99	
10.00		9.12	
13.00		31.4	
16.00		111.	
20.00		595.	
25.00		2845.	
A: 26.94		11616.	
DELTA K B:			
MAX C:			
D:			
ROOT MEAN SQUARE		19.73	0.00
PERCENT ERROR			
LIFE 0.0-0.5			
PREDICTION 0.5-0.8			
RATIO 0.8-1.25		3	
SUMMARY 1.25-2.0			
(NP/NA) >2.0			



CONDITION/HT: T861  
 FORM: 0.09" TH SHEET  
 SPECIMEN TYPE: CT  
 ORIENTATION: T-L  
 FREQUENCY: 0.10- 15.00 HZ  
 ENVIRONMENT: R. T., LAB AIR

YIELD STRENGTH: 73.0 KSI  
 ULT. STRENGTH: 76.6 KSI  
 SPECIMEN THK: 0.090"  
 SPECIMEN WIDTH: 5.000"  
 REFERENCES: 88578

ALUM.  
 ALLOY

2024

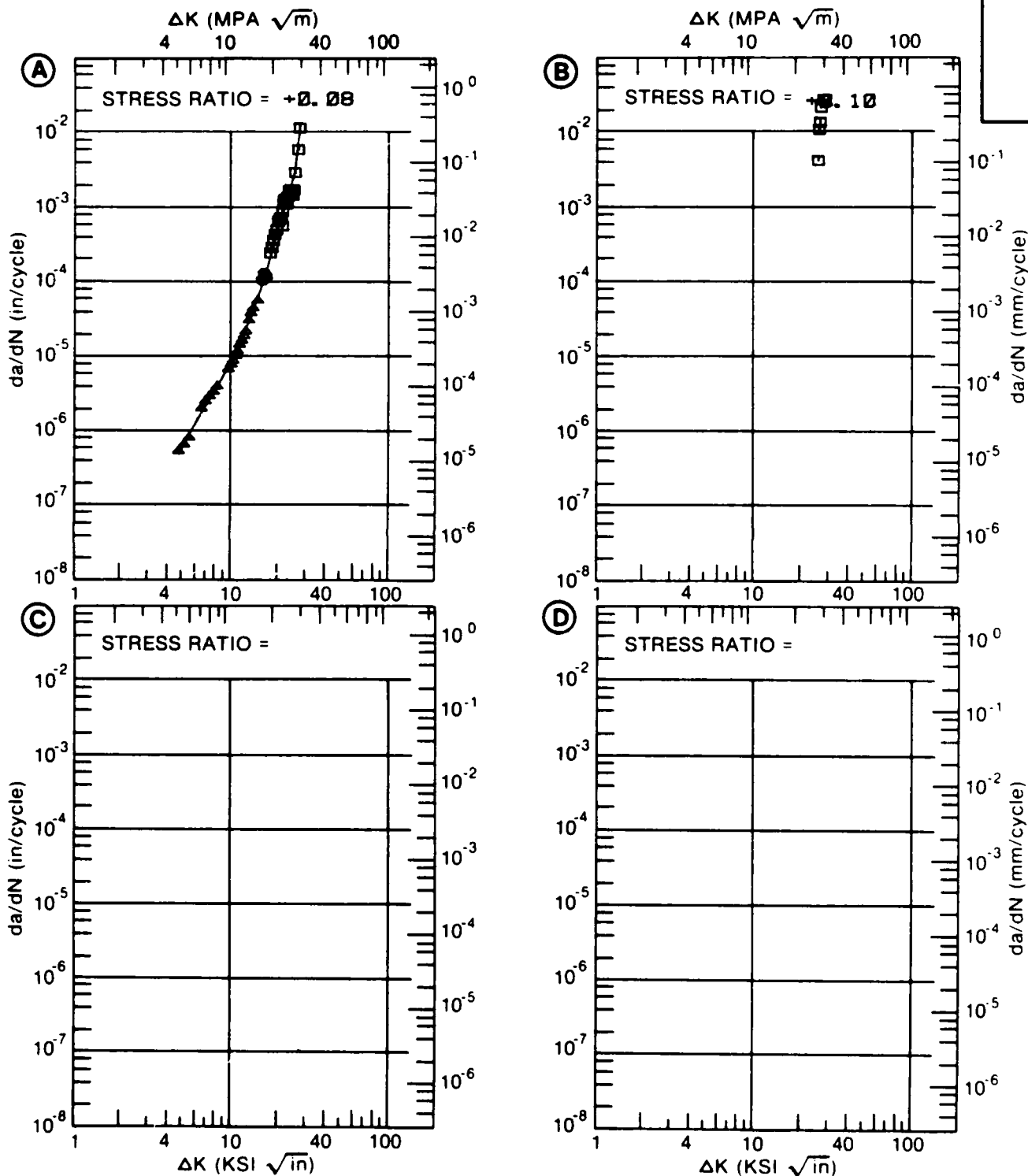


Figure 7.5.3.79

TABLE 7.5.3.80

**FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR**

**DATA ASSOCIATED WITH FIGURE 7.5.3.80 INDICATING EFFECT  
OF FREQUENCY**

MATERIAL: ALUMINUM		2024			
CONDITION: T861					
ENVIRONMENT: R. T. , LAB AIR					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		F(HZ)= 0.10-0.40	F(HZ)= 1.00-10.00	F(HZ)= 10.00-20.00	
DELTA K	A: 16.87	167.			
MIN	B: 13.66		65.8		
	C: 4.64			.90	
	D:				
	5.00			1.05	
	6.00			1.63	
	7.00			2.57	
	8.00			4.06	
	9.00			6.40	
	10.00			10.0	
	13.00			36.3	
	16.00		175.	121.	
	20.00	696.	642.		
	25.00	6906.			
DELTA K	A: 27.35	22814.			
MAX	B: 20.30		893.		
	C: 17.18			190.	
	D:				
ROOT MEAN SQUARE		28.81	12.20	17.24	
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8		1	1	
RATIO	0.8-1.25	2	3	6	
SUMMARY	1.25-2.0	1	1		
(NP/NA)	>2.0				

CONDITION/HT: T861  
 FORM: 0.09" TH SHEET  
 SPECIMEN TYPE: CT  
 ORIENTATION: T-L  
 STRESS RATIO: +0.10  
 ENVIRONMENT: R. T., LAB AIR

YIELD STRENGTH: 73.0 KSI  
 ULT. STRENGTH: 76.6 KSI  
 SPECIMEN THK: 0.090"  
 SPECIMEN WIDTH: 5.000"  
 REFERENCES: 88578

ALUM.  
 ALLOY

2024

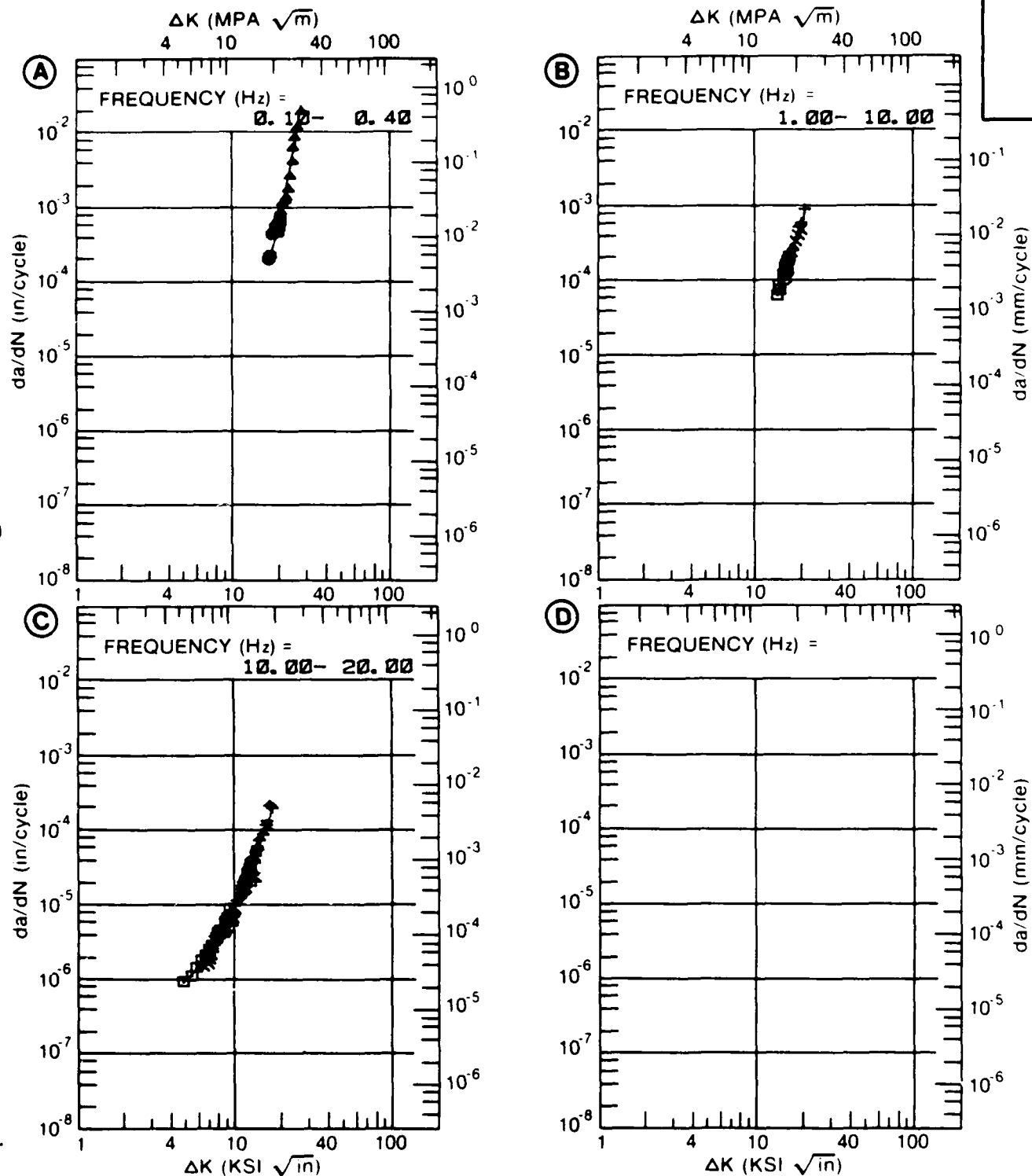


Figure 7.5.3.80

TABLE 7.5.3.81

**FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR**

**DATA ASSOCIATED WITH FIGURE 7.5.3.81 INDICATING EFFECT  
OF FREQUENCY**

MATERIAL: ALUMINUM 2024  
CONDITION: T861  
ENVIRONMENT: R. T. , LAB AIR

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		F(HZ)= 0. 10	F(HZ)= 1. 00-5. 00	F(HZ)= 10. 00-15. 00	
DELTA K	A: 15. 86 :	762.			
MIN	B: 11. 86 :		121.		
	C: 4. 66 :			. 582	
	D:				
	5. 00 :			1. 23	
	6. 00 :			2. 79	
	7. 00 :			4. 68	
	8. 00 :			8. 57	
	9. 00 :			16. 4	
	10. 00 :			31. 8	
	13. 00 :		198.		
	16. 00 :	730.			
DELTA K	A: 18. 41 :	3233.			
MAX	B: 15. 02 :		536.		
	C: 10. 48 :			43. 7	
	D:				

ROOT MEAN SQUARE	25. 86	9. 54	8. 61
PERCENT ERROR			

LIFE	0. 0-0. 5			
PREDICTION	0. 5-0. 8			
RATIO	0. 8-1. 25	1	1	1
SUMMARY	1. 25-2. 0			
(NP/NA)	>2. 0			

CONDITION/HT: T861  
 FORM: 0.09" TH SHEET  
 SPECIMEN TYPE: CT  
 ORIENTATION: T-L  
 STRESS RATIO: +0.40  
 ENVIRONMENT: R. T., LAB AIR

YIELD STRENGTH: 73.0 KSI  
 ULT. STRENGTH: 76.6 KSI  
 SPECIMEN THK: 0.090"  
 SPECIMEN WIDTH: 5.000"  
 REFERENCES: 88578

ALUM.  
 ALLOY

2024

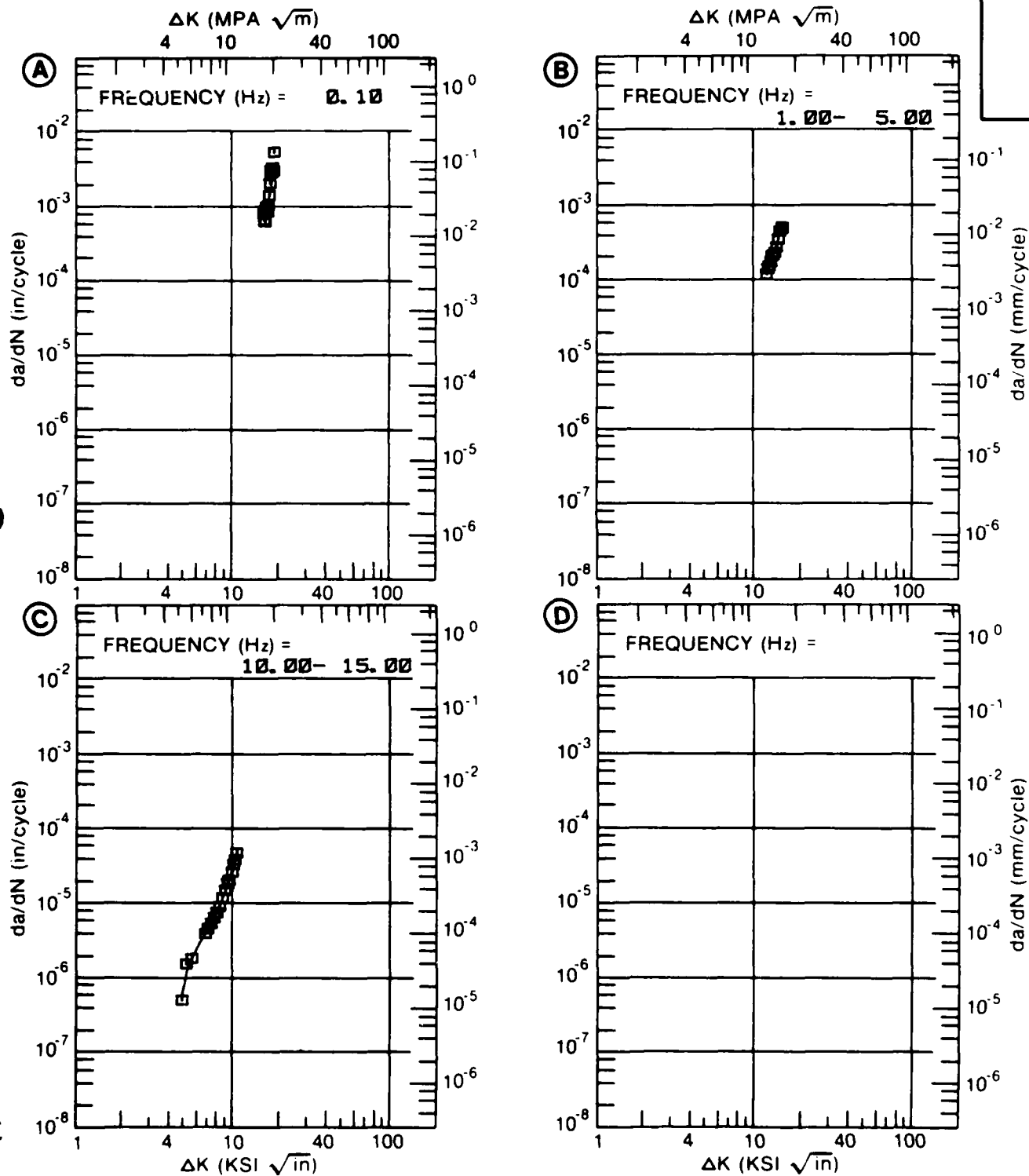


Figure 7.5.3.81

TABLE 7.5.3.82

**FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR**

**DATA ASSOCIATED WITH FIGURE 7.5.3.82 INDICATING EFFECT  
OF STRESS RATIO**

MATERIAL: ALUMINUM 2024  
CONDITION: T861  
ENVIRONMENT: R. T. , LAB AIR

DELTA K (KSI*IN**1/2)		DA/DN (10**+6 IN. /CYCLE)			
		A	B	C	D
		R=+0.10			
DELTA K MIN	A:	9.69	6.16		
	B:				
	C:				
	D:				
		10.00	6.91		
		13.00	16.3		
		16.00	45.0		
DELTA K MAX	A:	17.41	84.3		
	B:				
	C:				
	D:				

ROOT MEAN SQUARE 16.15  
PERCENT ERROR

LIFE	0.0-0.5	
PREDICTION	0.5-0.8	
RATIO	0.8-1.25	4
SUMMARY	1.25-2.0	
(NP/NA)	>2.0	

CONDITION/HT: T061  
 FORM: 0.25" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: T-L  
 FREQUENCY: 10.00 HZ  
 ENVIRONMENT: R. T., LAB AIR

YIELD STRENGTH: 70.8 KSI  
 ULT. STRENGTH: 74.9 KSI  
 SPECIMEN THK: 0.250"  
 SPECIMEN WIDTH: 5.000"  
 REFERENCES: 88578

ALUM.  
 ALLOY

2024

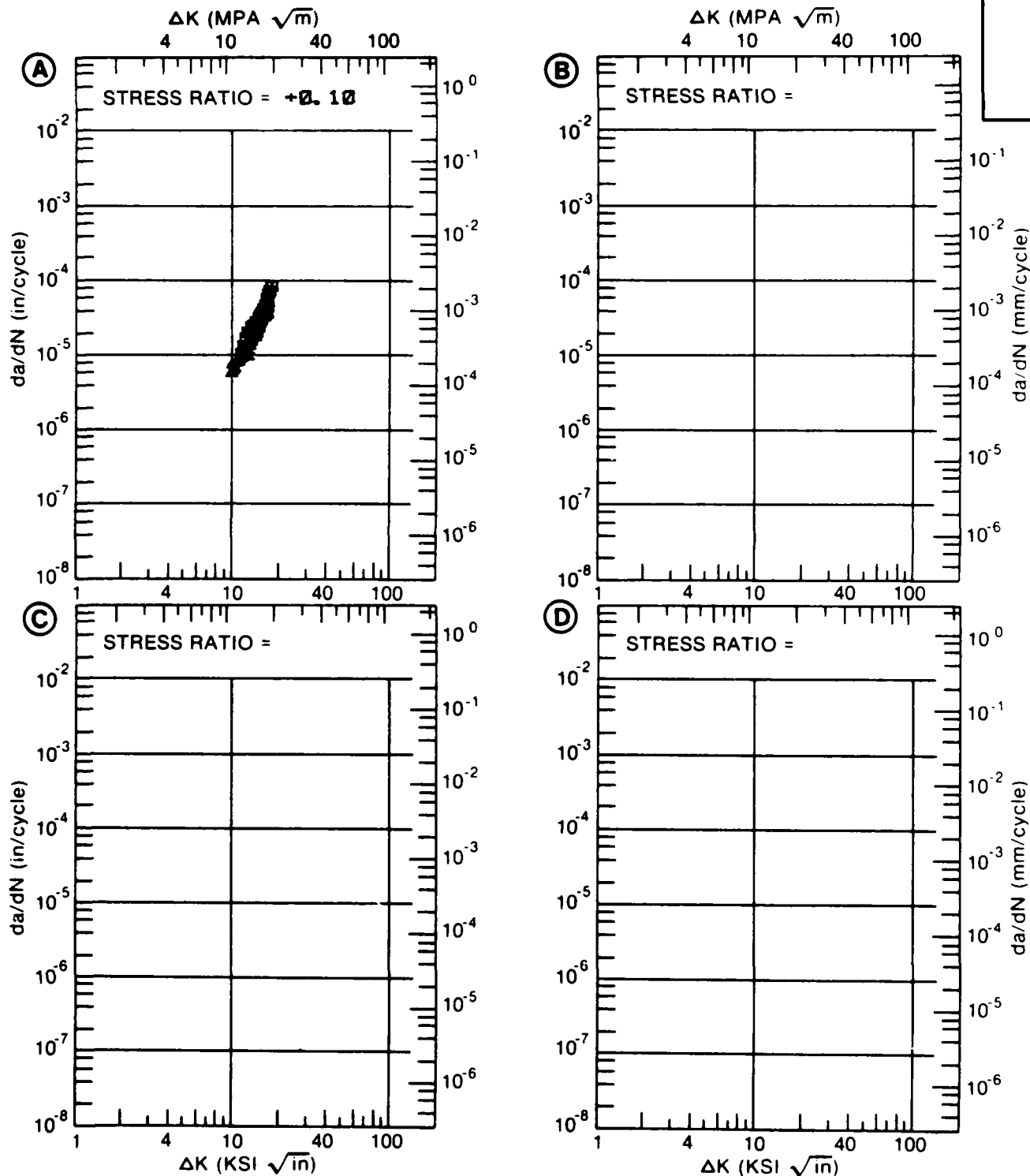


Figure 7.5.3.82

TABLE 7.5.3.83

**FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR**

**DATA ASSOCIATED WITH FIGURE 7.5.3.83 INDICATING EFFECT  
OF STRESS RATIO**

MATERIAL: ALUMINUM		2024	
CONDITION: T861			
ENVIRONMENT: R. T. , LAB AIR			
DELTA K		DA/DN (10**-6 IN. /CYCLE)	
(KSI*IN**1/2)			
		A	B
			C
			D
		R=+0. 10	R=+0. 40
A:	11. 03	11. 8	
DELTA K B:			
MIN C:			
D:			
	13. 00	17. 4	
	16. 00	38. 5	
	20. 00	127.	
	25. 00	580.	
	30. 00	2479.	
	35. 00	9690.	
A:	36. 01	12618.	
DELTA K B:			
MAX C:			
D:			
ROOT MEAN SQUARE		21. 52	0. 00
PERCENT ERROR			
LIFE	0. 0-0. 5		
PREDICTION	0. 5-0. 8		
RATIO	0. 8-1. 25	3	
SUMMARY	1. 25-2. 0	1	
(NP/NA)	>2. 0		



CONDITION/HT: T881  
 FORM: 0.25" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: T-L  
 FREQUENCY: 1.00- 5.00 HZ  
 ENVIRONMENT: R. T., LAB AIR

YIELD STRENGTH: 70.6 KSI  
 ULT. STRENGTH: 74.9 KSI  
 SPECIMEN THK: 0.250"  
 SPECIMEN WIDTH: 5.000"  
 REFERENCES: 88578

ALUM.  
 ALLOY

2024

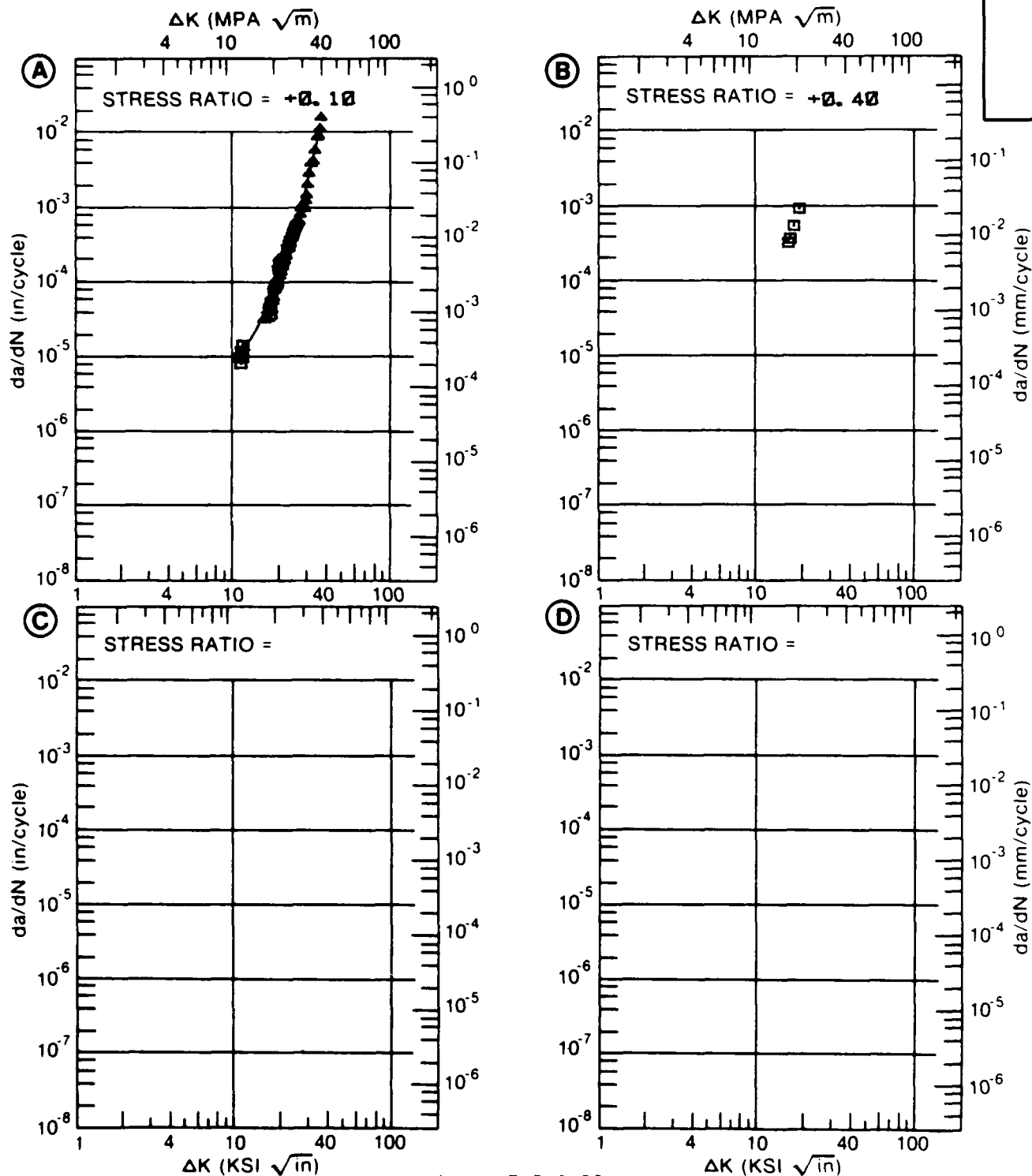


Figure 7.5.3.83

TABLE 7.5.3.84

SUSTAINED CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.5.3.84 INDICATING EFFECT

OF FORM

MATERIAL: ALUMINUM 2024  
 CONDITION: T351  
 ENVIRONMENT: 3X/DAY-3.5NACL

K MAX (KSI*IN**1/2)		DA/DT (10**-6 IN/HOUR)			
		A	B	C	D
		T(IN)= 1.0 PLATE	T(IN)= 1.2 PLATE	T(IN)= 2.0 PLATE	
K MAX MIN	A: 14.00	826.			
	B: 9.50		312.		
	C:				
	D:				
	10.00		337.		
	13.00		518.		
	16.00	875.	743.		
	20.00	1006.	1087.		
	25.00	1141.	1535.		
	30.00	1184.	1947.		
K MAX MAX	35.00	1130.	2278.		
	A: 40.00	1001.			
	B: 39.00		2472.		
	C:				
	D:				
ROOT MEAN SQUARE PERCENT ERROR		17.25	2.55	0.00	

CONDITION/HT: T351  
 ENVIRONMENT: 3X/DAY-3.5NaCl  
 SPECIMEN TYPE: DCB  
 ORIENTATION: S-L  
 YIELD STRENGTH:  
 ULT. STRENGTH:

SPECIMEN THK: 1.000"  
 SPECIMEN WIDTH: 5.000"  
 CRACK LENGTH ( $A_0$ ):  
 $K_{ISCC}$ :  
 REFERENCES: 78313, 84284

ALUM.  
ALLOY

2024

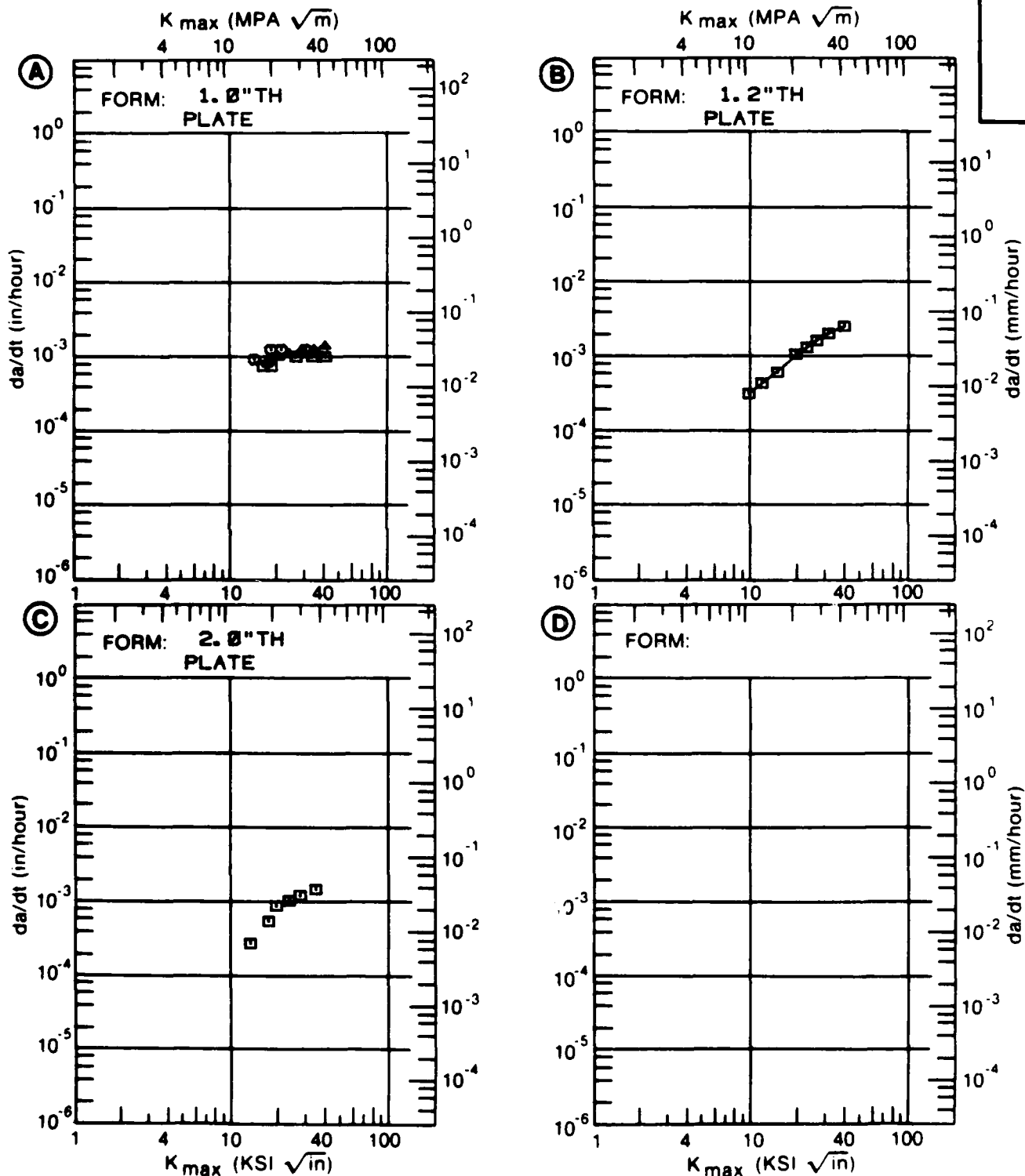


Figure 7.5.3.84

TABLE 7.5.3.85

SUSTAINED CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.5.3.85 INDICATING EFFECT

## OF ENVIRONMENT

---

MATERIAL: ALUMINUM 2024  
CONDITION: T4

---

K MAX (KSI*IN**1/2)		DA/DT (10**-6 IN/HOUR)			
		A	B	C	D
		E= WET 3X/DAY WITH 3.5% NaCl			
K MAX MIN	A: 10.00	376.			
	B:				
	C:				
	D:				
	13.00	545.			
	16.00	654.			
	20.00	736.			
	25.00	788.			
	30.00	822.			
	35.00	856.			
K MAX MAX	40.00	897.			
	50.00	1013.			
	A: 60.00	1189.			
	B:				
	C:				
	D:				
ROOT MEAN SQUARE		8.21			
PERCENT ERROR					

---

CONDITION/HT: T4  
 FORM: FORGING  
 SPECIMEN TYPE: DCB  
 ORIENTATION: S-L  
 YIELD STRENGTH:  
 ULT. STRENGTH:

SPECIMEN THK: 1.000"  
 SPECIMEN WIDTH: 5.000"  
 CRACK LENGTH ( $A_0$ ):  
 $K_{ISCC}$ :  
 REFERENCES: 78313

ALUM.  
 ALLOY

2024

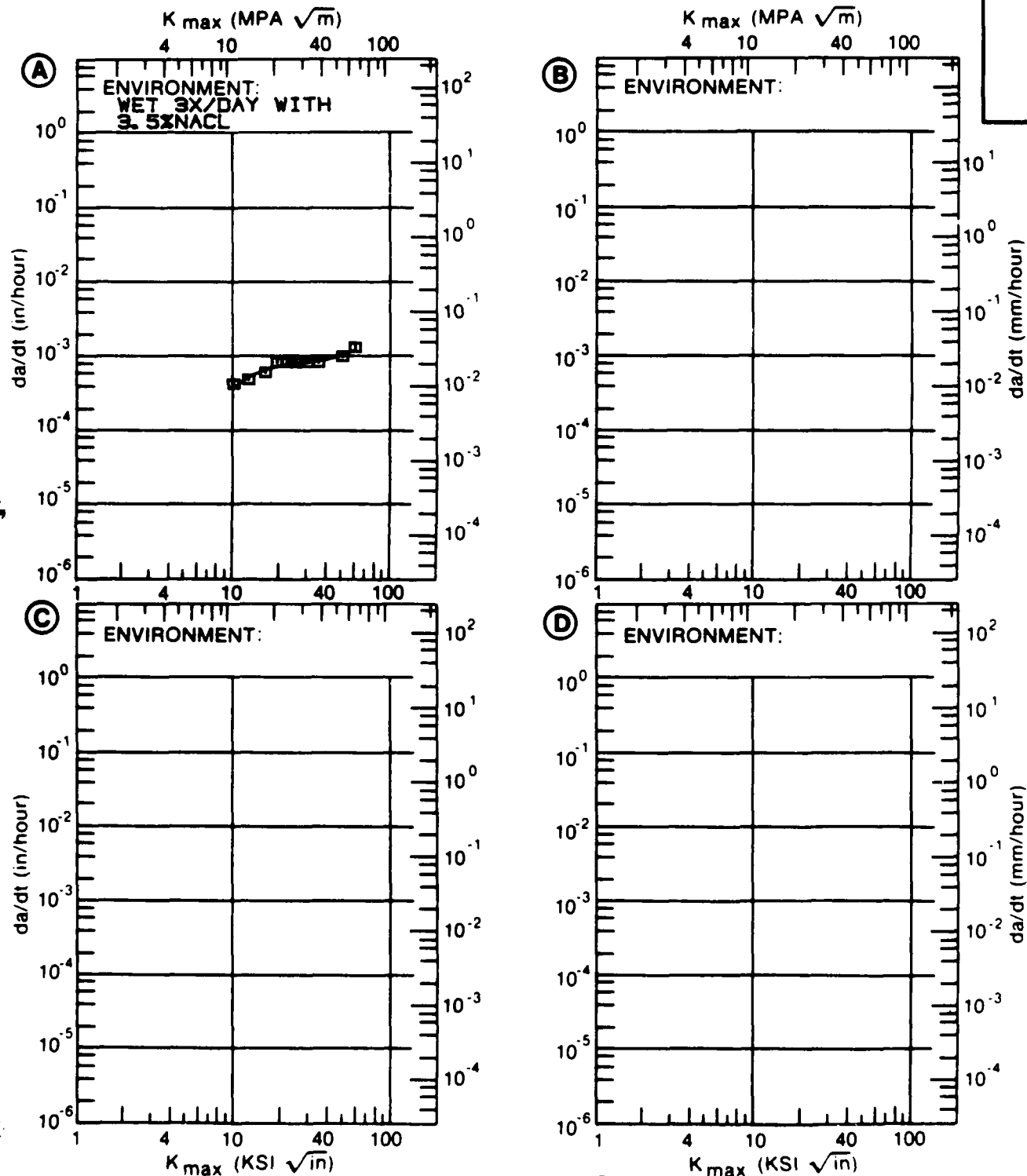


Figure 7.5.3.85

TABLE 7.5.3.86

CONDITION	--PRODUCT--				TEST SPEC OR STR	YIELD (KSI)	ENVIRONMENT	ALUMINUM		2024	K (ISCC)				STAN DEV	TEST TIME (MIN)	DATE REFER
	FORM	THICK (IN)	TEMP (F)	YIELD (KSI)				W	THICK (IN)		DESIGN (IN)	LENGTH (IN)	K (ISCC)				
T351	P	2.50	R.T.	S-L	42.4	INDUSTRIAL ATM	2.000	1.000	CT	----	21.20	10.00	----	1973	86688	----	
T351	P	2.50	R.T.	S-L	42.4	SALT-DICHROMATE-ACETATE	2.000	1.000	CT	----	21.20	9.00	----	1973	86688	----	
T351	P	2.50	R.T.	S-L	42.4	SEACOAST ATM	2.000	1.000	CT	----	21.20	10.00	----	1973	86688	----	
T351	P	1.00	R.T.	S-L	47.0	3.5 PCT NACL	5.000	1.000	DCB	----	50.00	10.00	----	1969	78313	----	
T352	F	6.00	R.T.	S-L	43.3	SEAWATER	1.400	0.700	DCB	----	27.60	23.00*	----	1972	82675	----	
T851	P	3.20	R.T.	L-T	59.3	AIR 78PCT RH	5.000	1.250	TDCB	----	18.60	22.70	----	1971	84360	----	
T851	P	3.20	R.T.	L-T	59.3	DIST WATER	5.000	1.250	TDCB	----	18.60	22.00	----	1971	84360	----	
T851	P	3.20	R.T.	L-T	59.3	JP-4 FUEL	5.000	1.250	TDCB	----	18.60	21.60	----	1971	84360	----	
T851	P	3.20	R.T.	L-T	59.3	3.5 PCT NACL	5.000	1.250	TDCB	----	18.60	21.50	----	1971	84360	----	
T851	P	2.50	R.T.	S-L	61.8	INDUSTRIAL ATM	2.000	1.000	CT	----	16.70	16.00	----	1973	86688	----	
T851	P	2.50	R.T.	S-L	61.8	SALT-DICHROMATE-ACETATE	2.000	1.000	CT	----	16.70	15.00	----	1973	86688	----	
T851	P	2.50	R.T.	S-L	61.8	SEACOAST ATM	2.000	1.000	CT	----	16.70	16.00	----	1973	86688	----	
T852	F	3.00	R.T.	L-T	53.0	S.C.S.	5.500	1.000	DCB	----	34.00	22.10	----	1976	R1006	64920	
		3.00			53.0		5.500	1.000	DCB	----	34.00	34.00	----	1976	R1006	61680	
											28.1	8.4					
T852	F	3.00	R.T.	L-T	58.0	S.T.W.	5.500	1.000	DCB	----	37.00	22.50	----	1976	R1006	76140	
		3.00			58.0		5.500	1.000	DCB	----	37.00	23.50	----	1976	R1006	76140	
		3.00			58.0		5.500	1.000	DCB	----	37.00	22.50	----	1976	R1006	76140	
											22.5	0.0					

\*NOTE- DATA WHICH DO NOT MEET MINIMUM SPECIMEN THICKNESS REQUIREMENTS OF 2.5 (KISCC/TYS) SQUARED







TABLE 7.6.2.1 (Con't)

CONDITION	--PRODUCT--			ALUMINUM			2024 (ALCLAD)										K(C)		
	FORM	THICK (IN)	TEST SPEC OR (KSI)	YIELD			CRACK			LENGTH			CROSS			STRESS			
				THICK (IN)	TEMP (F)	THICK (IN)	SPECIMEN		INIT (IN)	FINAL (IN)	ONSET (KSI)	MAX (KSI)	K(1)	K(2)	K(3)	K(4)	K(5)	K(6)	
							WIDTH (IN)	THICK (IN)											2A(O)
T3	S	0.08	0.08	R. T.	L-T	50.4	5.900	0.079	1.580	2.010	33.30	36.20	59.69*	69.35*	1966	84366			
		0.08	0.08	50.4	5.900	0.079	3.190	3.540	15.90	21.40	58.22*	65.82*	1966	84366					
		0.08	0.08	50.4	5.900	0.079	3.150	3.540	17.20	21.40	58.22*	65.82*	1966	84366					
		0.08	0.08	50.4	5.900	0.079	1.180	1.610	36.70	40.30	56.26*	67.20*	1966	84366					
		0.08	0.08	50.4	5.900	0.079	1.180	1.500	36.60	40.10	55.98*	66.37*	1966	84366					
		0.08	0.08	50.4	5.900	0.079	1.180	1.610	39.20	39.80	55.56*	66.37*	1966	84366					
		0.08	0.08	50.4	5.900	0.079	1.580	2.120	30.80	35.90	59.20*	71.27*	1966	84366					
		0.08	0.08	50.4	5.900	0.079	3.190	3.580	20.60	23.10	48.55*	60.17*	1966	84366					
		0.08	0.08	51.8	5.900	0.079	1.180	1.580	34.60	40.90	57.10*	67.44*	1966	84366					
		0.08	0.08	51.8	5.900	0.079	0.790	1.220	45.30	46.20	52.04*	65.70*	1966	84366					
		0.08	0.08	51.8	5.900	0.079	0.790	1.140	43.10	44.00	49.56*	60.27*	1965	70485					
		0.08	0.08	51.8	5.900	0.079	3.190	3.500	19.60	20.50	55.77*	62.24*	1966	84366					
		0.08	0.08	51.8	5.900	0.079	1.180	1.530	33.60	41.10	57.38*	66.49*	1966	84366					
		0.08	0.08	51.8	5.900	0.079	0.390	0.630	49.90	90.00	39.24*	50.09*	1965	70485					
		0.08	0.08	51.8	5.900	0.079	0.790	1.140	43.10	44.00	49.56*	60.27*	1966	84366					
		0.08	0.08	51.8	5.900	0.079	1.580	2.160	31.20	36.60	60.35*	73.99*	1966	84366					
0.08	0.08	51.8	5.900	0.079	1.580	2.050	29.60	37.00	61.01*	71.82*	1966	84366							
0.08	0.08	51.8	5.900	0.079	1.580	2.160	31.20	36.60	60.35*	73.99*	1965	70485							
0.08	0.08	51.8	5.900	0.079	0.790	1.220	45.30	46.20	52.04*	65.70*	1966	84366							
0.08	0.08	51.8	5.900	0.079	1.580	2.050	29.60	37.00	61.01*	71.82*	1965	70485							
0.08	0.08	51.8	5.900	0.079	3.150	3.500	20.20	21.20	57.68*	64.37*	1965	70485							
0.08	0.08	51.8	5.900	0.079	3.150	3.580	20.60	21.30	57.93*	66.37*	1965	70485							
0.08	0.08	51.8	5.900	0.079	0.790	1.140	46.30	46.90	52.83*	64.25*	1966	84366							
0.08	0.08	51.8	5.900	0.079	0.790	1.140	46.20	46.80	52.72*	64.11*	1965	70485							
0.08	0.08	51.8	5.900	0.079	1.180	1.500	36.10	41.10	57.38*	65.73*	1966	84366							
0.08	0.08	51.8	5.900	0.079	1.580	2.090	33.40	36.60	60.35*	71.97*	1965	70485							
0.08	0.08	51.8	5.900	0.079	3.150	3.500	20.20	21.20	57.68*	64.37*	1966	84366							
0.08	0.08	51.8	5.900	0.079	0.390	0.670	49.10	49.40	38.77*	51.09*	1965	70485							
0.08	0.08	51.8	5.900	0.079	1.580	2.080	33.40	36.60	60.35*	71.73*	1966	84366							
0.08	0.08	53.0	5.900	0.079	1.180	1.580	36.40	40.90	57.10*	67.44*	1966	84366							
0.08	0.08	53.0	5.900	0.079	1.180	1.580	36.40	40.90	57.10*	67.44*	1966	84366							
0.08	0.08	53.0	5.900	0.079	1.140	---	---	45.00	50.69*	61.64*	1966	84366							
0.08	0.08	53.0	5.900	0.079	1.180	1.610	36.60	40.00	55.84*	66.70*	1966	84366							

\*NOTE- NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STD. DEV.

TABLE 7.6.2.1 (Con't)

CONDITION	--PRODUCT-- FORM THICK TEMP OR (IN) (F)	TEST SPEC STR (KSI)	ALUMINUM		2024 (ALCLAD)								K(C)		CRACK LENGTH GROSS STRESS				K (APP) STAN				K (C) STAN			
			W	B	SPECIMEN		INIT (IN)	FINAL (IN)	ONSET (KSI)	MAX (KSI)	K (APP) (KSI*SQRT IN)	MEAN (KSI*SQRT IN)	DEV (KSI*SQRT IN)	K (C) (KSI*SQRT IN)	MEAN (KSI*SQRT IN)	DEV (KSI*SQRT IN)	DATE	REFER								
					WIDTH (IN)	THICK (IN)																				
					2A(O)	2A(F)	S(O)	S(MAX)																		
BUCKLING OF CRACK EDGES RESTRAINED																										
T3	S	0.08	R. T.	L-T	53.0	5.900	0.079	0.790	---	---	45.00	50.69*	---	---	---	---	---	---	---	---	---	---				
					53.0	5.900	0.079	3.150	3.420	21.80	59.31*	---	---	---	---	---	---	---	---	---	---					
					53.0	5.900	0.079	0.790	---	44.90	50.58*	---	---	---	---	---	---	---	---	---	---					
					53.0	5.900	0.079	1.580	2.050	---	37.70	62.16*	---	---	---	---	---	---	---	---	---					
					53.0	5.900	0.079	3.150	3.980	---	21.10	57.41*	---	---	---	---	---	---	---	---	---					
					53.0	5.900	0.079	1.580	1.970	29.00	36.20	59.69*	---	---	---	---	---	---	---	---	---					
T3	S	0.08	R. T.	L-T	51.8	11.800	0.079	1.770	2.480	30.50	41.90	70.83*	---	---	---	---	---	---	---	---	---					
					51.8	11.800	0.079	1.180	1.580	31.00	45.10	61.78*	---	---	---	---	---	---	---	---	---					
					51.8	11.800	0.079	1.770	2.280	28.50	42.10	71.19*	---	---	---	---	---	---	---	---	---					
					51.8	11.800	0.079	3.540	4.340	24.90	34.00	84.94*	---	---	---	---	---	---	---	---	---					
					51.8	11.800	0.079	3.540	4.610	25.80	33.80	84.44*	---	---	---	---	---	---	---	---	---					
					51.8	11.800	0.079	4.720	5.710	17.20	28.30	85.67*	---	---	---	---	---	---	---	---	---					
T3	S	0.08	R. T.	L-T	51.8	11.800	0.079	1.180	1.610	33.40	45.80	62.74*	---	---	---	---	---	---	---	---	---					
					51.8	11.800	0.079	1.770	2.480	32.30	42.10	71.19*	---	---	---	---	---	---	---	---	---					
					51.8	11.800	0.079	1.180	2.240	32.00	45.50	62.33*	---	---	---	---	---	---	---	---	---					
					51.8	23.600	0.079	1.180	2.620	37.80	49.20	67.09*	---	---	---	---	---	---	---	---	---					
					51.8	23.600	0.079	3.150	4.450	25.60	35.40	79.62	---	---	---	---	---	---	---	---	---					
					51.8	23.600	0.079	1.580	---	---	46.30	73.14*	---	---	---	---	---	---	---	---	---					
T3	S	0.08	R. T.	L-T	51.8	23.600	0.079	1.580	2.520	40.70	48.60	76.78*	---	---	---	---	---	---	---	---	---					
					51.8	23.600	0.079	4.720	5.750	22.20	29.80	83.20	---	---	---	---	---	---	---	---	---					
					51.8	23.600	0.079	6.300	9.450	18.00	30.90	101.71*	---	---	---	---	---	---	---	---	---					
					51.8	23.600	0.079	8.660	11.720	13.20	25.20	101.50	---	---	---	---	---	---	---	---	---					
					51.8	23.600	0.079	15.750	---	---	13.70	96.46	---	---	---	---	---	---	---	---	---					
					51.8	23.600	0.079	1.580	2.440	40.71	47.00	74.23*	---	---	---	---	---	---	---	---	---					
T3	S	0.08	R. T.	L-T	51.8	23.600	0.079	3.150	4.490	25.30	37.00	83.23*	---	---	---	---	---	---	---	---						
					51.8	23.600	0.079	1.180	1.850	41.90	47.50	66.13*	---	---	---	---	---	---	---	---	---					
					51.8	23.600	0.079	3.150	4.600	28.00	34.60	77.82	---	---	---	---	---	---	---	---	---					
					51.8	23.600	0.079	1.180	2.090	41.70	50.00	68.18*	---	---	---	---	---	---	---	---	---					
					51.8	23.600	0.079	0.790	1.420	28.90	52.40	58.41*	---	---	---	---	---	---	---	---	---					
					51.8	23.600	0.079	0.790	1.690	46.20	50.40	56.18*	---	---	---	---	---	---	---	---	---					
T3	S	0.08	R. T.	L-T	51.8	23.600	0.079	4.720	7.400	23.90	37.80	105.54*	---	---	---	---	---	---	---	---	---					
					51.8	23.600	0.079	4.720	7.400	23.90	37.80	105.54*	---	---	---	---	---	---	---	---	---	---				
					51.8	23.600	0.079	4.720	7.400	23.90	37.80	105.54*	---	---	---	---	---	---	---	---	---	---				
					51.8	23.600	0.079	4.720	7.400	23.90	37.80	105.54*	---	---	---	---	---	---	---	---	---	---				
					51.8	23.600	0.079	4.720	7.400	23.90	37.80	105.54*	---	---	---	---	---	---	---	---	---	---				
					51.8	23.600	0.079	4.720	7.400	23.90	37.80	105.54*	---	---	---	---	---	---	---	---	---	---				

\*NOTE- NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STD. DEV.

TABLE 7.6.2.1 (Con't)

CONDITION	--PRODUCT-- FORM THICK TEMP OR (IN) (F)	TEST SPEC YIELD STR (KSI)	ALUMINUM		2024 (ALCLAD)		K(C)		CRACK LENGTH CROSS STRESS				K(AFP) STAN		K(C) STAN	
			W	B	THICK (IN)	INIT (IN)	FINAL (IN)	ONSET (KSI)	MAX (KSI)	K(AFP) (KSI)	K(AFP) STAN (KSI)	K(AFP) STAN (KSI)	K(C) STAN (KSI)	K(C) STAN (KSI)		
BUCKLING OF CRACK EDGES RESTRAINED																
T3	S	0.08	0.08	R.T.	L-T	51.8	23.600	0.079	1.970	3.190	32.60	45.10	79.68*	102.11*	1965 70485	1965 70485
		0.08	0.08			51.8	23.600	0.079	6.300	9.050	15.90	31.90	105.00*	132.50*	1965 70485	1965 70485
		0.08	0.08			51.8	23.600	0.079	11.800	12.320	12.70	20.20	103.42	109.24*	1965 70485	1965 70485
		0.08	0.08			51.8	23.600	0.079	4.720	6.300	23.60	31.30	87.39	103.03*	1965 70485	1965 70485
		0.08	0.08			51.8	23.600	0.079	0.790	---	---	49.80	55.51*	89.9/10.5	---	---
T3	S	0.09	0.09	R.T.	L-T	56.0	5.900	0.095	0.790	1.060	46.40	47.60	53.62*	62.67*	1966 84366	1966 84366
		0.09	0.09			56.0	5.900	0.095	1.580	2.240	25.80	38.20	62.99*	78.78*	1966 84366	1966 84366
		0.09	0.09			56.0	5.900	0.095	1.580	2.400	31.80	38.20	62.99*	82.78*	1966 84366	1966 84366
		0.09	0.09			56.0	5.900	0.095	3.150	3.900	20.30	23.80	64.73*	72.26*	1966 84366	1966 84366
		0.09	0.09			56.0	5.900	0.095	3.150	3.740	21.60	23.60	64.21*	77.56*	1966 84366	1966 84366
		0.09	0.09			56.0	5.900	0.095	0.790	1.100	46.40	47.60	53.51*	63.81*	1966 84366	1966 84366
		0.09	0.09			56.0	5.900	0.095	1.180	1.540	39.80	43.00	60.03*	69.84*	1966 84366	1966 84366
T3	S	0.11	0.11	R.T.	L-T	53.2	11.800	0.118	3.540	4.690	23.30	32.20	80.44*	97.03*	1966 70319	1966 70319
		0.11	0.11			53.2	11.800	0.118	1.770	2.320	34.00	41.50	70.17*	84.97*	1966 70319	1966 70319
		0.11	0.11			53.2	11.800	0.118	1.770	2.720	31.90	41.60	70.34*	88.92*	1966 70319	1966 70319
		0.11	0.11			53.2	11.800	0.118	1.770	2.480	35.70	41.90	70.83*	85.03*	1966 70319	1966 70319
		0.11	0.11			53.2	11.800	0.118	4.720	5.400	20.40	25.60	77.50*	85.95*	1966 70319	1966 70319
		0.11	0.11			53.2	11.800	0.118	4.720	5.350	20.60	25.20	76.29	86.54*	1966 70319	1966 70319
		0.11	0.11			53.2	11.800	0.118	1.180	1.730	38.70	45.00	61.65*	75.18*	1966 70319	1966 70319
		0.11	0.11			53.2	11.800	0.118	3.540	4.560	25.20	32.20	80.44*	95.09*	1966 70319	1966 70319
		0.11	0.11			53.2	11.800	0.118	1.180	1.810	37.80	44.30	60.69*	75.80*	1966 70319	1966 70319
T3	S	0.16	0.16	R.T.	L-T	52.0	11.800	0.158	1.770	2.990	34.80	41.10	69.50*	92.77*	1966 70319	1966 70319
		0.16	0.16			52.0	11.800	0.158	3.540	4.210	23.30	32.20	80.44*	89.97*	1966 70319	1966 70319
		0.16	0.16			52.0	11.800	0.158	4.720	5.640	20.90	26.50	80.22*	92.24*	1966 70319	1966 70319
		0.16	0.16			52.0	11.800	0.158	1.180	1.610	38.10	44.30	60.69*	71.27*	1966 70319	1966 70319
		0.16	0.16			52.0	11.800	0.158	3.540	4.610	26.30	32.50	81.19*	96.72*	1966 70319	1966 70319
		0.16	0.16			52.0	11.800	0.158	4.720	6.060	19.80	26.90	81.43*	99.78*	1966 70319	1966 70319
		0.16	0.16			52.0	11.800	0.158	1.180	1.610	38.40	44.40	60.82*	71.43*	1966 70319	1966 70319
		0.16	0.16			52.0	11.800	0.158	1.770	2.440	33.80	41.60	70.34*	83.66*	1966 70319	1966 70319
		0.16	0.16			52.0	11.800	0.158	1.770	2.520	34.00	41.30	69.84*	84.56*	1966 70319	1966 70319
T3	S	0.01	0.01	R.T.	T-L	46.0	14.990	0.009	7.500	9.510	---	20.80	84.92*	109.08*	1962 62308	1962 62308

\*NOTE- NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STD. DEV.

TABLE 7.6.2.1 (Con't)

CONDITION	ALUMINUM				2024 (ALCLAD)										K(C)												
	--PRODUCT-- FORM		THICK (IN)		TEST TEMP (F)		SPEC OR		YIELD (KSI)		CRACK LENGTH CROSS STRESS																
	---SPECIMEN---		WIDTH (IN)		THICK (IN)		INIT (IN)		FINAL (IN)		ONSET (KSI)		MAX (KSI)		K(APP) (KSI*SQRT IN)		STAN DEV		K(C) (KSI*SQRT IN)		K(C) MEAN DEV		STAN DEV		REFER DATE		
	W		B		2A(D)		2A(F)		S(O)		S(MAX)																
BUCKLING OF CRACK EDGES RESTRAINED																											
T3	S	0.01	R.T.	T-L	46.0	14.990	0.010	7.500	9.060	---	21.20	86.56*	104.82*	1962	62308												
T3	S	0.02	R.T.	T-L	46.5	15.000	0.020	7.500	8.680	---	20.40	83.27*	96.09*	1966	86734												
T3	S	0.06	R.T.	T-L	44.9	48.000	0.061	24.000	28.650	---	17.10	124.86	149.12*	1966	86734												
T3	S	0.08	R.T.	T-L	43.0	47.980	0.079	24.000	27.150	---	18.80	137.29*	154.64*	1966	86734												
		0.08			43.0	47.980	0.080	24.000	27.810	---	18.90	138.02*	159.50*	1966	86734												

T3	S	0.06 0.06 0.06 0.06	60 L-T	BUCKLING OF CRACK EDGES NOT RESTRAINED										1966 86734 1966 86734 1966 86734 1966 86734
				47.0 47.0 47.0 47.0	12.000 12.000 12.000 12.000	0.061 0.061 0.061 0.061	3.000 3.910 3.000 3.000	--- --- --- ---	31.60 26.82 32.10 31.60	71.37* 71.18* 72.50* 71.37*	--- --- --- ---			
T3	S	0.03	R. T. L-T	51.0	9.000	0.032	2.560	2.800	---	31.90	67.36*	71.20*	1965 62311	
T3	S	0.04	R. T. L-T	44.3	7.500	0.040	3.000	---	---	21.30	51.41*	---	1966 86734	
		0.04		44.4	7.500	0.040	3.000	---	---	21.90	52.85*	---	1966 86734	
		0.04		46.1	7.500	0.040	1.050	---	---	37.20	48.36*	---	1966 86734	
		0.04		46.1	7.500	0.040	4.700	---	---	12.14	44.34	---	1966 86734	
		0.04		46.1	7.500	0.040	4.190	---	---	15.27	48.53	---	1966 86734	
		0.04		46.1	7.500	0.040	2.000	---	---	29.90	55.45*	---	1966 86734	
		0.04		46.1	7.500	0.040	4.700	---	---	12.14	44.34	---	1966 86734	
		0.04		46.1	7.500	0.040	0.550	---	---	41.30	38.52*	---	1966 86734	
		0.04		46.1	7.500	0.040	1.100	---	---	39.60	52.76*	---	1966 86734	
		0.04		46.1	7.500	0.040	3.900	---	---	16.73	50.05	---	1966 86734	
		0.04		46.1	7.500	0.040	1.050	---	---	37.10	48.23*	---	1966 86734	
		0.04		46.1	7.500	0.040	2.100	---	---	38.70	54.80*	---	1966 86734	
		0.04		46.1	7.500	0.040	0.550	---	---	41.60	38.79*	---	1966 86734	
		0.04		46.1	7.500	0.040	0.500	---	---	42.10	37.41*	---	1966 86734	

\*NOTE- NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STD. DEV.

TABLE 7.6.2.1 (Con't)

CONDITION	--PRODUCT-- FORM	THICK (IN)	TEST SPEC TEMP OR (F)	YIELD STR (KSI)	ALUMINUM		2024 (ALCLAD)		K(C)																																							
					---SPECIMEN---		CRACK LENGTH CROSS STRESS																																									
					WIDTH (IN)	THICK (IN)	INIT (IN)	FINAL (IN)	MAX (KSI)	MAX (KSI)	K(APP) (KSI*SQRT IN)	STAN DEV	K(C) (KSI*SQRT IN)	STAN DEV	REFER																																	
					W	B	2A(D)	2A(F)	S(O)	S(MAX)																																						
T3	S	0.04	R. T.	L-T	47.4	7.500	0.040	4.700	---	---	13.00	47.48	---	---	---	---	---	---	---	---	---	1966 86734																										
																							47.4	7.500	0.040	4.200	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1966 86734					
																							47.4	7.500	0.040	4.100	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1966 86734				
																							47.4	7.500	0.040	0.950	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1966 86734				
																							47.4	7.500	0.040	0.500	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1966 86734				
																							47.4	7.500	0.040	2.200	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1966 86734				
																							47.4	7.500	0.040	0.750	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1966 86734				
																							47.4	7.500	0.040	4.000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1966 86734				
																							47.4	7.500	0.040	2.000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1966 86734			
																							47.4	7.500	0.040	1.050	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1966 86734			
																							47.4	7.500	0.040	0.500	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1966 86734			
																							51.0	7.500	0.040	1.150	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1966 86734			
																							51.0	7.500	0.040	5.900	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1966 86734			
																							51.0	7.500	0.040	0.650	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1966 86734			
																							51.0	7.500	0.040	4.280	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1966 86734			
T3	S	0.04	R. T.	L-T	51.0	9.000	0.040	4.420	4.880	18.10	20.50	63.80	---	---	---	---	---	---	---	---	---	1965 62311																										
																							51.0	9.000	0.040	6.280	6.300	9.60	9.50	45.99	---	---	---	---	---	---	---	---	---	---	---	---	1965 62311					
																							51.0	9.000	0.040	6.220	6.620	9.20	10.90	49.89	---	---	---	---	---	---	---	---	---	---	---	---	---	1965 62311				
																							51.0	9.000	0.040	2.490	2.800	28.30	31.90	66.24	---	---	---	---	---	---	---	---	---	---	---	---	---	1965 62311				
																							51.0	9.000	0.040	4.480	4.980	18.20	20.70	65.19	53.2/	9.4	72.06	---	---	---	---	---	---	---	---	---	---	1965 62311				
																							51.0	9.000	0.040	2.260	4.900	27.50	40.10	76.15	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1965 62311			
																							51.0	20.000	0.040	2.260	7.370	27.00	40.10	76.15	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1965 62311		
																							51.0	20.000	0.040	2.260	7.370	27.00	40.10	76.15	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1965 62311	
																							51.0	20.000	0.040	2.260	7.370	27.00	40.10	76.15	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1965 62311
																							51.0	20.000	0.040	2.260	7.370	27.00	40.10	76.15	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1965 62311
																							51.0	20.000	0.040	2.260	7.370	27.00	40.10	76.15	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1965 62311
																							51.0	20.000	0.040	2.260	7.370	27.00	40.10	76.15	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1965 62311
																							51.0	20.000	0.040	2.260	7.370	27.00	40.10	76.15	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1965 62311
																							51.0	20.000	0.040	2.260	7.370	27.00	40.10	76.15	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1965 62311
																							51.0	20.000	0.040	2.260	7.370	27.00	40.10	76.15	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1965 62311

\*NOTE- NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STD. DEV

TABLE 7.6.2.1 (Con't)

CONDITION	--PRODUCT--		TEST SPEC		YIELD STR (KSI)	SPECIMEN		CRACK LENGTH CROSS STRESS				K(APP) STAN		K(C) STAN		DATE REFER	
	FORM	THICK (IN)	TEMP (F)	OR		W	THICK (IN)	INIT (IN)	FINAL (IN)	ONSET (KSI)	MAX (KSI)	K(APP) (KSI*80RT IN)	MEAN DEV (KSI*80RT IN)	K(C) (KSI*80RT IN)			
ALUMINUM																	
2024 (ALCLAD) K(C)																	
BUCKLING OF CRACK EDGES NOT RESTRAINED																	
T3	S	0.04	R. T.	L-T	50.6	30.000	0.040	15.000	19.700	---	17.70	102.17	137.40*	---	---	1966 86734	
					50.6	30.000	0.040	15.000	17.700	---	18.30	105.64	124.53*	---	---	1966 86734	
					50.9	30.000	0.040	6.000	---	---	27.80	87.51	---	---	---	1966 86734	
					51.3	30.000	0.040	12.000	---	---	17.50	84.47	---	---	---	1966 86734	
					51.6	30.000	0.040	12.000	---	---	17.41	84.04	---	---	---	1966 86734	
		0.04			52.1	30.000	0.040	3.000	---	---	36.10	78.85	90.4/10.8	---	---	1966 86734	
T3	S	0.06	R. T.	L-T	53.2	2.000	0.064	0.621	0.980	31.60	36.20	38.00*	53.00*	---	---	1973 86213	
					53.2	2.000	0.064	0.622	1.020	33.30	36.20	38.08*	54.93*	---	---	1973 86213	
T3	S	0.06	R. T.	L-T	44.2	7.500	0.064	3.760	---	---	19.75	57.14*	---	---	---	1966 86734	
					44.2	7.500	0.064	1.080	---	---	41.80	55.15*	---	---	---	1966 86734	
					44.2	7.500	0.064	3.910	---	---	18.83	56.47*	---	---	---	1966 86734	
					44.2	7.500	0.064	4.900	---	---	12.13	46.76	---	---	---	1966 86734	
					44.2	7.500	0.064	1.940	---	---	34.30	62.47*	---	---	---	1966 86734	
					44.2	7.500	0.064	0.500	---	---	44.80	39.81*	---	---	---	1966 86734	
					44.2	7.500	0.064	0.960	---	---	45.80	56.82*	---	---	---	1966 86734	
					44.2	7.500	0.064	0.500	---	---	46.00	40.88*	---	---	---	1966 86734	
					44.2	7.500	0.064	5.490	---	---	12.13	55.01*	---	---	---	1966 86734	
					44.2	7.500	0.064	0.500	---	---	45.20	40.17*	---	---	---	1966 86734	
					44.2	7.500	0.064	0.500	---	---	46.10	40.97*	---	---	---	1966 86734	
					44.2	7.500	0.064	1.930	---	---	34.10	61.92*	---	---	---	1966 86734	
T3	S	0.06	R. T.	L-T	52.7	15.810	0.065	3.000	4.370	---	36.10	80.15*	99.30*	---	---	1973 86213	
					52.7	15.810	0.064	6.010	7.310	---	22.80	77.04	89.35*	---	---	1973 86213	
					52.7	15.820	0.062	4.000	---	---	30.90	80.66	---	---	---	1973 86213	
		0.06			52.7	15.820	0.063	1.020	1.500	---	47.10	59.77*	78.9/ 2.6	72.70*	---	---	1973 86213
T3	S	0.08	R. T.	L-T	49.4	47.990	0.079	24.000	27.300	---	19.60	143.12	162.14*	---	---	1966 86734	
					49.4	47.990	0.080	24.000	27.450	---	19.60	143.12	143.1/ 0.0	163.08*	---	---	1966 86734
T3	S	0.09	R. T.	L-T	51.0	9.000	0.091	4.480	4.860	20.10	23.20	73.06*	78.82*	---	---	1965 62311	
					51.0	9.000	0.091	2.500	3.040	28.10	34.90	72.65*	82.12*	---	---	1965 62311	
					51.0	9.000	0.091	4.480	5.060	20.10	23.10	72.75*	81.74*	---	---	1965 62311	
					51.0	9.000	0.091	2.560	2.920	28.10	35.70	75.38*	81.83*	---	---	1965 62311	

\*NOTE-- NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STD. DEV.



TABLE 7.6.2.1 (Con't)

		ALUMINUM		2024 (ALCLAD)										K(C)			
				CRACK LENGTH GROSS STRESS													
CONDITION	--PRODUCT-- FORM THICK TEMP OR (IN) (F)	TEST SPEC YIELD BTR (KSI)	--SPECIMEN--		CRACK LENGTH GROSS STRESS						K(APP) STAN		K(C) STAN				
			WIDTH (IN)	THICK (IN)	INIT (IN)	FINAL (IN)	ONSET (KSI)	MAX (KSI)	K(APP) (KSI*80RT IN)	MEAN DEV (KSI*80RT IN)	K(C) (KSI*80RT IN)	MEAN DEV (KSI*80RT IN)	DATE REFER				
			W	B	2A(D)	2A(F)	S(D)	S(MAX)									
BUCKLING OF CRACK EDGES NOT RESTRAINED																	
T3	S	0.04	R.T.	T-L	59.5	7.500	0.040	2.060	---	---	---	29.30	55.30	---	---	1966 86734	
		0.04			59.5	7.500	0.040	0.500	---	---	---	45.70	40.61*	---	---	1966 86734	
		0.04			59.5	7.500	0.040	0.550	---	---	---	45.00	41.97*	---	---	1966 86734	
		0.04			59.5	7.500	0.040	4.000	---	---	---	15.76	48.29	---	---	1966 86734	
		0.04			59.5	7.500	0.040	4.710	---	---	---	11.53	42.22	48 9/ 6.1	---	1966 86734	
T3	S	0.04	R.T.	T-L	43.3	29.990	0.041	15.000	18.620	---	---	17.20	99.30	---	124.20*	1962 62308	
		0.04			43.3	30.020	0.040	15.000	16.200	---	---	19.10	110.23*	---	118.44*	1962 62308	
T3	S	0.06	R.T.	T-L	46.2	2.000	0.064	0.623	1.120	32.30	33.50	33.50	35.24*	---	59.65*	1973 86213	
		0.06			46.2	2.000	0.064	0.622	1.100	32.00	33.50	33.50	35.24*	---	54.64*	1973 86213	
T3	S	0.06	R.T.	T-L	43.4	6.000	0.060	2.000	2.200	---	---	29.30	55.81*	---	59.48*	1966 86734	
T3	S	0.06	R.T.	T-L	50.7	7.500	0.064	0.500	---	---	---	41.50	36.88*	---	---	1966 86734	
		0.06			50.7	7.500	0.064	4.400	---	---	---	14.63	49.46	---	---	1966 86734	
		0.06			50.7	7.500	0.064	4.500	---	---	---	12.14	42.10	---	---	1966 86734	
		0.06			50.7	7.500	0.064	4.090	---	---	---	16.15	50.58	---	---	1966 86734	
		0.06			50.7	7.500	0.064	2.000	---	---	---	30.50	56.56*	---	---	1966 86734	
		0.06			50.7	7.500	0.064	4.160	---	---	---	19.92	50.72	---	---	1966 86734	
		0.06			50.7	7.500	0.064	0.660	---	---	---	40.00	40.92*	---	---	1966 86734	
		0.06			50.7	7.500	0.064	0.500	---	---	---	42.00	37.32*	---	---	1966 86734	
		0.06			50.7	7.500	0.064	1.950	---	---	---	30.30	55.36*	---	---	1966 86734	
		0.06			50.7	7.500	0.064	1.000	---	---	---	37.60	47.69*	---	---	1966 86734	
		0.06			62.6	7.500	0.064	0.500	---	---	---	42.90	38.12	---	---	1966 86734	
		0.06			62.6	7.500	0.064	0.750	---	---	---	42.30	46.20	---	---	1966 86734	
		0.06			62.6	7.500	0.064	0.500	---	---	---	44.40	39.46	---	---	1966 86734	
		0.06			62.6	7.500	0.064	2.300	---	---	---	27.10	54.72	---	---	1966 86734	
		0.06			62.6	7.500	0.064	1.000	---	---	---	40.30	51.07	---	---	1966 86734	
		0.06			62.6	7.500	0.064	2.170	---	---	---	30.00	58.43	---	---	1966 86734	
		0.06			62.6	7.500	0.064	1.110	---	---	---	37.50	50.20	---	---	1966 86734	
		0.06			62.6	7.500	0.064	0.750	---	---	---	41.70	45.54	48 1/ 6.0	---	1966 86734	
T3	S	0.06	R.T.	T-L	43.4	9.000	0.060	3.000	3.600	---	---	28.60	66.71*	---	75.61*	1966 86734	

\*NOTE- NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STD. DEV.



TABLE 7.6.2.1 (Con't)

[illegible]

\*NOTE- NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STD. DEV.



TABLE 7.6.3.1

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.6.3.1 INDICATING EFFECT

OF STRESS RATIO

MATERIAL: ALUMINUM 2024  
 CONDITION: T3  
 ENVIRONMENT: R. T. , LAB AIR

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		R=+0.00	R=+0.33		
DELTA K MIN	A: 8.49	1.44			
	B: 5.87		1.12		
	C:				
	D:				
	6.00		1.23		
	7.00		2.32		
	8.00		3.67		
	9.00	2.02	5.25		
	10.00	3.32	7.07		
	13.00	7.71	14.4		
DELTA K MAX	16.00	12.3	27.0		
	20.00	21.6	62.6		
	25.00	51.1	192.		
	30.00	154.			
	A: 30.54	176.			
	B: 28.15		403.		
	C:				
	D:				
ROOT MEAN SQUARE		11.73	9.35		
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25	2	4		
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION/HT: T3  
 FORM: 0.09" TH SHEET  
 SPECIMEN TYPE: CCP  
 ORIENTATION: T-L  
 FREQUENCY: 13.30 HZ  
 ENVIRONMENT: R. T., LAB AIR

YIELD STRENGTH: 45.8 KSI  
 ULT. STRENGTH: 66.6 KSI  
 SPECIMEN THK: 0.090"  
 SPECIMEN WIDTH: 4.000"  
 REFERENCES: 86213

ALUM.  
 ALLOY

2024  
 (ALCLAD)

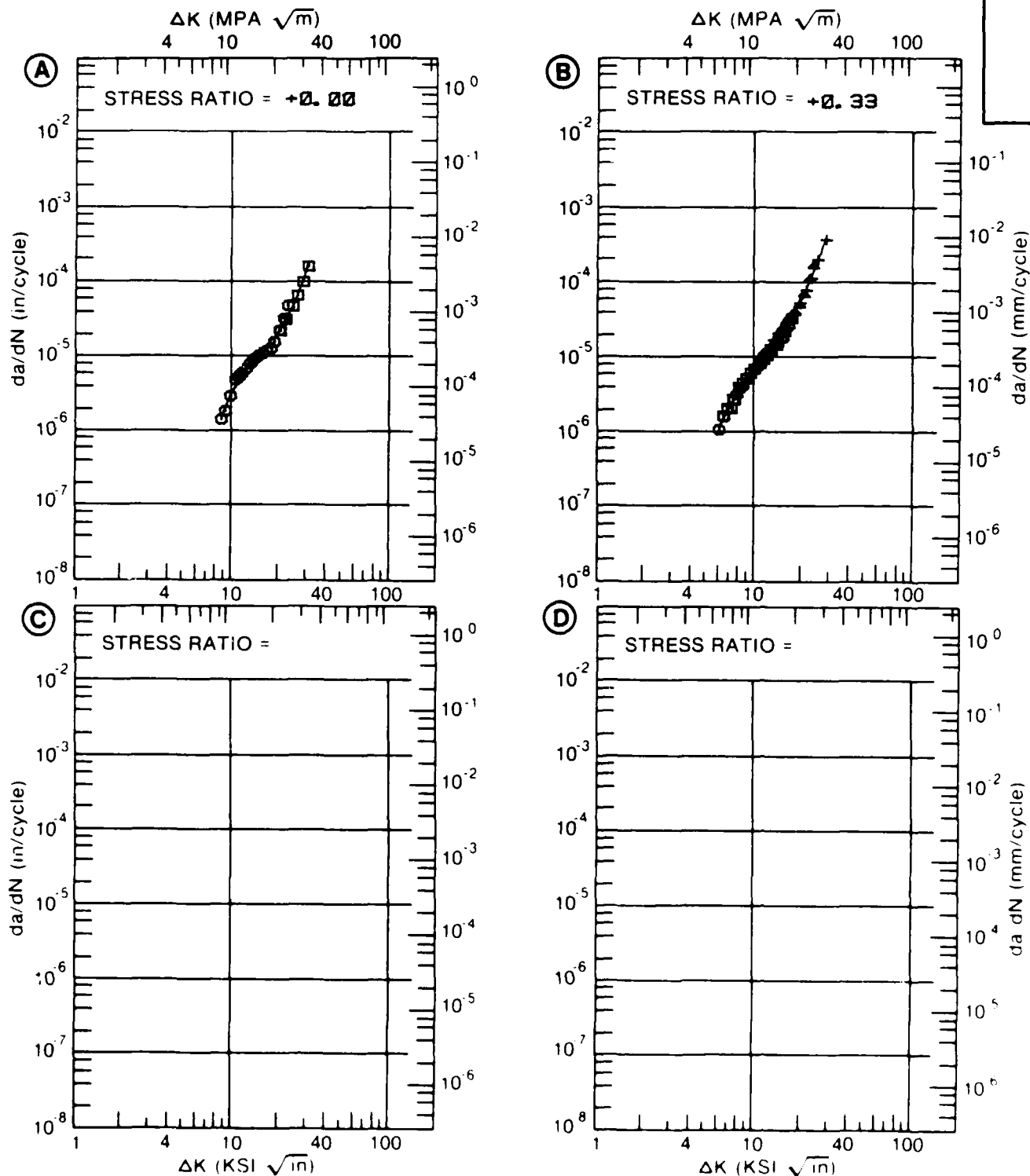


Figure 7.6.3.1

TABLE 7.7.1.1

MEAN PLANE STRAIN FRACTURE TOUGHNESS DATA OF  
ALUMINUM ALLOY 2048 AT ROOM TEMPERATURE

CONDITION/HT	MEAN K <sub>IC</sub> ± STANDARD (KSI SQRT(IN)) DEVIATION		(NUMBER OF SPECIMENS)	
	PLATE			
	L-I	I-L	S-L	
T651	37 9 ± 1 9 (22)	30 6 ± 2 5 (24)	25 4 ± 1 9 (18)	

TABLE 7.7.1.2

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR

ALUMINUM 2048

TEST CONDITIONS

SPECIMEN  
ORIENTATION L-T

ENVIRONMENT DRY AIR  
AT R T

CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQ (HZ)	DELTA K LEVELS (KSI SQRT(IN))	FATIGUE CRACK GROWTH RATES (MICRO IN/CYCLE)				
					2	5	10	50	100
T851	PLATE	0.33	2 00-20.00				4.99	56.3	
T851	PLATE	0.33	2 00-20.00				3.24		

TABLE 7.7.1.3

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR

ALUMINUM 2048

## TEST CONDITIONS

SPECIMEN

ORIENTATION

L-T

ENVIRONMENT

S.T.W.  
AT R.T.

CONDITION/WT	PRODUCT FORM	STRESS RATIO	FREQ (HZ)	DELTA K LEVELS (KSI SQRT(IN))	FATIGUE CRACK GROWTH RATES (MICRO IN/CYCLE)					
					2.5	5	10	20	50	100
T651	PLATE	0.33	2.00-20.00				9.14			
T851	PLATE	0.33	2.00-20.00				9.60			

TABLE 7.7.1.4

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR

ALUMINUM 2048

TEST CONDITIONS

SPECIMEN ORIENTATION 1-L

ENVIRONMENT DRY AIR AT R T

CONDITION/MT	PRODUCT FORM	STRESS RATIO	FREQ (HZ)	DELTA K LEVELS (KSI SQRT(IN))	2	5	1	20	50	100
1051	PLATE	0.33	2 00-20 00							
1051	PLATE	0.33	2 00-30 00							



TABLE 7.7.1.5

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR

ALUMINUM 2048

## TEST CONDITIONS

SPECIMEN  
ORIENTATION T-LENVIRONMENT: S T W  
AT R T

CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQ (HZ)	DELTA K LEVELS: (KSI SQRT(IN))	FATIGUE CRACK GROWTH RATES (MICRO IN/CYCLE)					
					2.5	5	10	20	50	100
T851	PLATE	0.33	2.00-30.00		0.08	0.82	11.9			
T851	PLATE	0.33	2.00-20.00			1.01	10.4			
T851	PLATE	0.67	2.00-30.00			1.52	24.6			

TABLE 7.7.2.1

CONDITION	ALUMINUM			2048		K(1C)		DATE	REFER					
	--PRODUCT-- FORM	THICK (IN)	YIELD STRENGTH (KSI)	SPECIMEN		CRACK LENGTH (IN)	2.5* (K(1C)/TVS)**2 (IN)							
				W	B									
T851	P	4.00	R.T.	L-T		4.000	2.000	CT	2.000	1.07	38.60	38.60	1977	AL001
		4.00				4.000	2.000	CT	2.040	1.06	38.40	38.40	1977	AL001
		4.00				4.000	2.000	CT	2.020	1.00	37.40	37.40	1977	AL001
		1.00				2.000	1.000	CT	1.030	0.97	38.70	38.70	1977	AL001
		2.00				4.000	1.980	CT	2.060	1.11	42.40	42.40	1977	AL001
		2.00				4.000	1.980	CT	2.070	0.97	39.60	39.60	1977	AL001
		2.00				4.000	1.980	CT	2.050	1.05	41.20	41.20	1977	AL001
		3.00				6.000	3.000	CT	3.120	0.80	36.40	36.40	1977	AL001
		4.00				4.000	2.000	CT	2.010	0.75	35.20	35.20	1977	AL001
		3.00				6.000	3.000	CT	3.140	0.84	37.20	37.20	1977	AL001
		4.00				4.000	2.000	CT	2.020	0.77	36.20	36.20	1977	AL001
		3.00				6.000	3.000	CT	3.120	0.83	37.00	37.00	1977	AL001
		4.00				4.000	2.000	CT	2.020	0.80	36.40	36.40	1977	AL001
		3.00				6.000	3.000	CT	3.060	0.89	38.50	38.50	1977	AL001
		3.00				6.000	3.000	CT	3.080	0.84	37.60	37.60	1977	AL001
		3.00				6.000	3.000	CT	3.070	0.90	38.80	38.80	1977	AL001
		2.00				4.000	1.980	CT	2.040	0.88	38.40	38.40	1977	AL001
		2.00				4.000	1.980	CT	2.040	0.90	39.30	39.30	1977	AL001
		2.00				4.000	1.980	CT	2.040	0.91	39.40	39.40	1977	AL001
		1.00				2.000	1.000	CT	1.040	0.70	35.70	35.70	1977	AL001
1.00				2.000	1.000	CT	1.040	0.70	35.70	35.70	1977	AL001		
1.00				2.000	1.000	CT	1.020	0.68	35.20	37.9/ 1.9	1977	AL001		
T851	P	4.00	R.T.	T-L		4.000	2.000	CT	2.020	0.61	28.40	28.40	1977	AL001
		4.00				4.000	2.000	CT	2.060	0.61	28.30	28.30	1977	AL001
		4.00				4.000	2.000	CT	2.030	0.60	28.00	28.00	1977	AL001
		1.00				2.000	1.000	CT	1.030	0.67	31.70	31.70	1977	AL001
		1.00				2.000	1.000	CT	1.030	0.67	31.70	31.70	1977	AL001
		1.00				2.000	1.000	CT	1.040	0.68	31.80	31.80	1977	AL001
		4.00				4.000	2.000	CT	2.030	0.45	26.20	26.20	1977	AL001
		4.00				4.000	2.000	CT	2.060	0.46	26.60	26.60	1977	AL001
		4.00				4.000	2.000	CT	2.040	0.48	27.00	27.00	1977	AL001
		4.00				4.000	1.980	CT	2.050	0.57	30.00	30.00	1977	AL001
		2.00				4.000	1.980	CT	2.060	0.55	29.40	29.40	1977	AL001
		2.00				4.000	1.980	CT	2.090	0.56	29.70	29.70	1977	AL001
		3.00				6.000	3.000	CT	3.100	0.70	33.30	33.30	1977	AL001
		3.00				6.000	3.000	CT	3.140	0.73	33.90	33.90	1977	AL001
		3.00				6.000	3.000	CT	3.070	0.71	33.60	33.60	1977	AL001
		3.00				6.000	3.000	CT	3.240	0.70	33.70	33.70	1977	AL001

TABLE 7.7.2.1 (Con't)

CONDITION	ALUMINUM										K(1C)					
	--PRODUCT--		TEST	SPECIMEN	YIELD	-----SPECIMEN-----				CRACK	2.5*	K(1C)/TVB)**2	K(1C) MEAN	STAN	DATE	REFER
	FORM	THICK				THICK	ORIENT	STRENGTH	WIDTH							
	(IN)	(IN)	(F)		(KSI)	(IN)	(IN)		(IN)							
T851	P	3.00	R. T.	T-L	63.9	6.000	3.000	CT	3.280	0.72	34.30				1977	AL001
		3.00			63.9	6.000	3.000	CT	3.240	0.73	34.90				1977	AL001
		2.00			64.9	4.000	1.980	CT	2.090	0.52	29.90				1977	AL001
		2.00			64.9	4.000	1.980	CT	2.070	0.55	30.40				1977	AL001
		2.00			64.9	4.000	1.980	CT	2.050	0.53	29.90				1977	AL001
		1.00			65.4	2.000	1.000	CT	1.060	0.56	30.90				1977	AL001
		1.00			65.4	2.000	1.000	CT	1.050	0.55	30.70				1977	AL001
T851	P	4.00	R. T.	S-L	56.0	3.000	1.500	CT	1.530	0.59	26.20				1977	AL001
		4.00			56.0	3.000	1.500	CT	1.530	0.48	24.60				1977	AL001
		4.00			56.0	3.000	1.500	CT	1.530	0.52	25.60				1977	AL001
		3.00			58.5	2.500	1.250	CT	1.280	0.38	22.90				1977	AL001
		3.00			58.5	2.500	1.250	CT	1.280	0.41	23.70				1977	AL001
		3.00			58.5	2.500	1.250	CT	1.280	0.38	22.80				1977	AL001
		3.00			58.9	2.500	1.250	CT	1.290	0.65	30.00				1977	AL001
		3.00			58.9	2.500	1.250	CT	1.290	0.60	28.80				1977	AL001
		3.00			58.9	2.500	1.250	CT	1.300	0.52	26.80				1977	AL001
		2.00			59.3	1.500	0.750	CT	0.770	0.43	24.70				1977	AL001
		2.00			59.3	1.500	0.750	CT	0.770	0.43	24.70				1977	AL001
		2.00			59.3	1.500	0.750	CT	0.780	0.46	25.30				1977	AL001
		4.00			59.5	3.000	1.500	CT	1.520	0.42	24.50				1977	AL001
		4.00			59.5	3.000	1.500	CT	1.520	0.42	24.30				1977	AL001
		4.00			59.5	3.000	1.500	CT	1.520	0.40	23.90				1977	AL001
		2.00			59.9	1.500	0.750	CT	0.780	0.47	26.00				1977	AL001
		2.00			59.9	1.500	0.750	CT	0.780	0.48	26.20				1977	AL001
		2.00			59.9	1.500	0.750	CT	0.780	0.48	26.20	25.4/	1.9		1977	AL001

TABLE 7.7.3.1

**FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR**

DATA ASSOCIATED WITH FIGURE 7.7.3.1 INDICATING EFFECT

**OF ENVIRONMENT**

MATERIAL: ALUMINUM  
CONDITION: T851

2048

DELTA K  
(KSI\*IN\*\*1/2)

DA/DN (10\*\*-6 IN. /CYCLE)

A

B

C

D

E= R. T.  
: DRY AIR

E= R. T.  
S. T. W.

DELTA K A: 5.67  
MIN B: 5.12  
C:  
D:

.484

.924

6.00

.567

2.07

7.00

.909

3.56

8.00

1.43

5.32

9.00

2.19

7.58

10.00

3.24

9.60

13.00

8.78

14.5

16.00

19.0

DELTA K A: 19.95  
MAX B: 14.65  
C:  
D:

40.4

23.7

ROOT MEAN SQUARE  
PERCENT ERROR

20.95

12.60

LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25  
SUMMARY 1.25-2.0  
(NP/NA) >2.0

CONDITION/HT: T851  
 FORM: 1.00" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 STRESS RATIO: +0.33  
 FREQUENCY: 2.00-20.00 HZ

YIELD STRENGTH: 67.5 KSI  
 ULT. STRENGTH: 71.4 KSI  
 SPECIMEN THK: 1.00"  
 SPECIMEN WIDTH: 3.905"  
 REFERENCES: AL001

ALUM.  
 ALLOY

2048

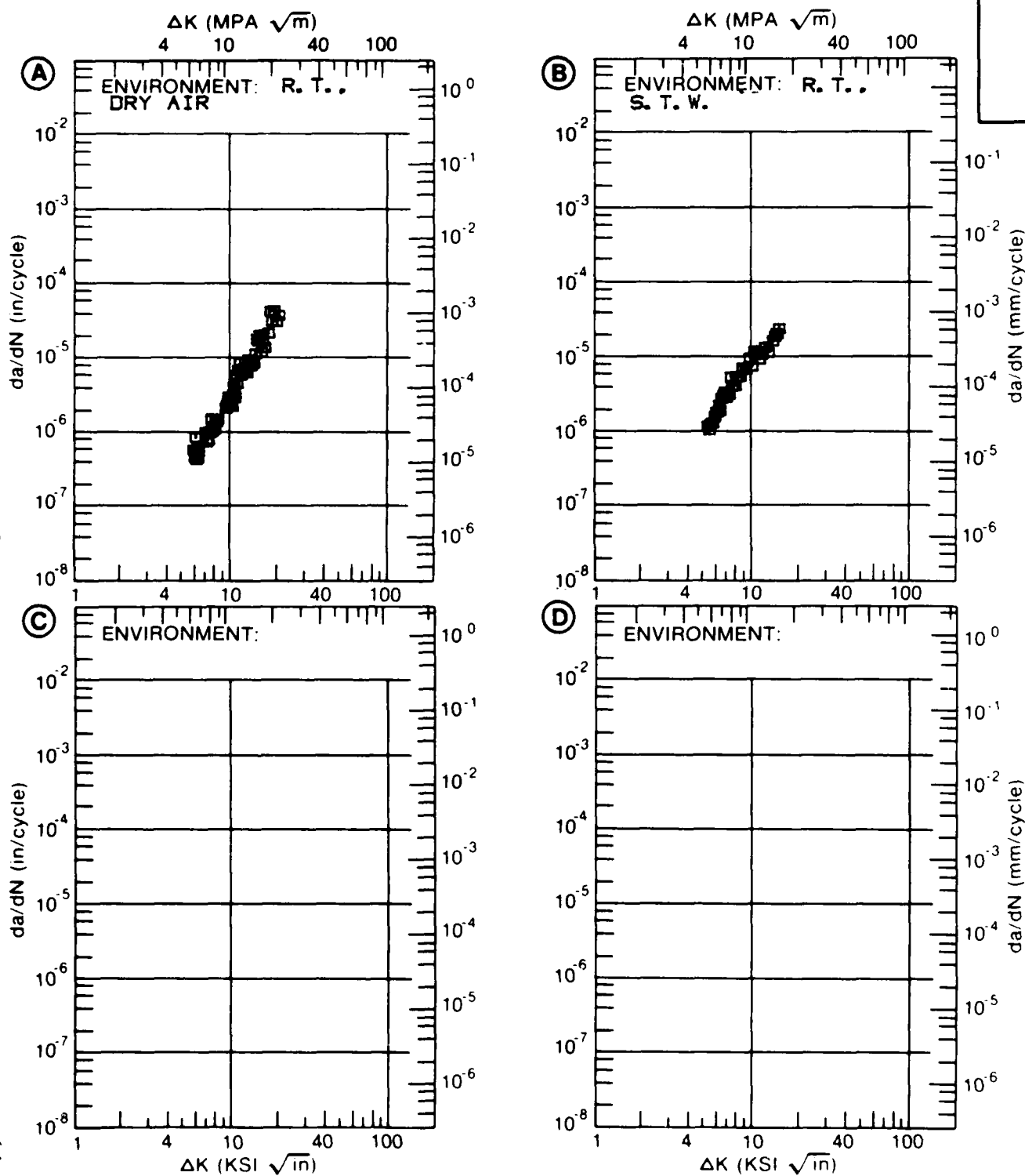


Figure 7.7.3.1

TABLE 7.7.3.2

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.7.3.2 INDICATING EFFECT  
OF ENVIRONMENT

MATERIAL: ALUMINUM		2048			
CONDITION: T851					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R. T. DRY AIR	E= R. T. H. H. A.	E= R. T. S. T. W.	
DELTA K A:	5.67	.855			
MIN B:	5.67		1.36		
C:	4.50			.843	
D:					
	5.00			1.01	
	6.00	.895	1.73	2.04	
	7.00	1.25	3.09	3.93	
	8.00	2.01	4.77	6.02	
	9.00	3.37	6.76	8.13	
	10.00	5.58	9.12	10.4	
	13.00	19.2	19.7	20.2	
	16.00	40.5	40.6		
DELTA K A:	19.81	152.			
MAX B:	18.55		76.1		
C:	15.99			45.9	
D:					
ROOT MEAN SQUARE		22.75	13.68	13.37	
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25				
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION/HT: T851  
 FORM: 1.00" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: T-L  
 STRESS RATIO: +0.33  
 FREQUENCY: 2.00- 20.00 HZ

YIELD STRENGTH: 85.4 KSI  
 ULT. STRENGTH: 70.5 KSI  
 SPECIMEN THK: 1.000"  
 SPECIMEN WIDTH: 3.805"  
 REFERENCES: AL001

ALUM.  
 ALLOY

2048

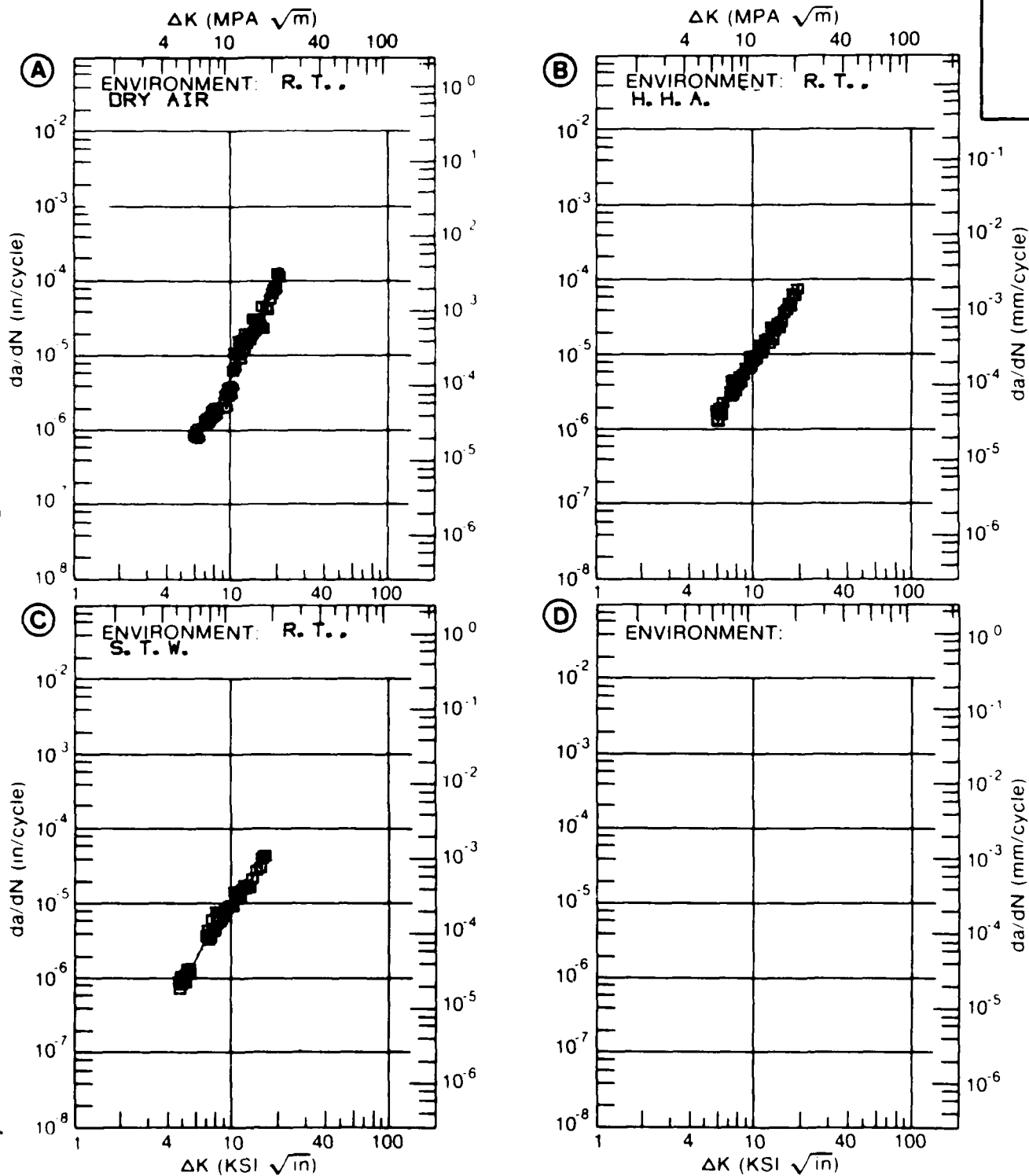


Figure 7.7.3.2

TABLE 7.7.3.3

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.7.3.3 INDICATING EFFECT

OF ENVIRONMENT

MATERIAL: ALUMINUM		2048			
CONDITION: T851					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R. T. DRY AIR	E= R. T. S. T. W.		
DELTA K A:	6.42	1.42			
DELTA K B:	5.10		.702		
MIN C:					
D:					
	6.00		1.67		
	7.00	1.36	3.21		
	8.00	2.51	5.06		
	9.00	3.89	7.06		
	10.00	4.99	9.14		
	13.00	8.78	15.9		
	16.00	19.9			
	20.00	56.3			
DELTA K A:	20.35	66.6			
DELTA K B:	14.76		20.5		
MAX C:					
D:					
ROOT MEAN SQUARE		18.85	17.65		
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25				
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				



CONDITION/HT: T851  
 FORM: 4.00" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 STRESS RATIO: +0.33  
 FREQUENCY: 2.00- 20.00 HZ

YIELD STRENGTH: 59.1 KSI  
 ULT. STRENGTH: 64.4 KSI  
 SPECIMEN THK: 1.000"  
 SPECIMEN WIDTH: 3.100"  
 REFERENCES: AL001

ALUM.  
 ALLOY

2048

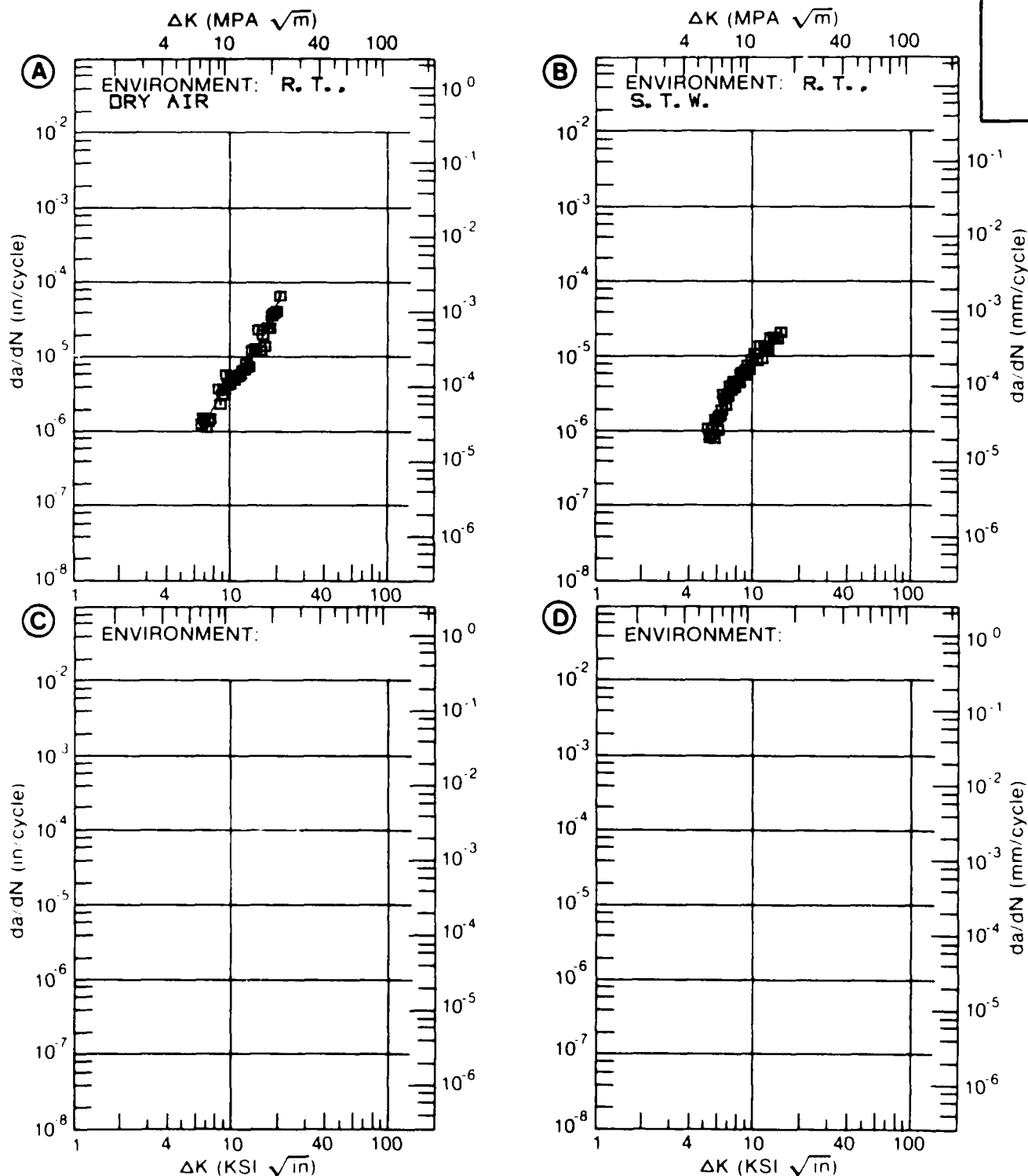


Figure 7.7.3.3

TABLE 7.7.3.4

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTORDATA ASSOCIATED WITH FIGURE 7.7.3.4 INDICATING EFFECT  
OF STRESS RATIO

MATERIAL: ALUMINUM		2048			
CONDITION: TB51					
ENVIRONMENT: R. T., S. T. W.					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		R=+0.33	R=+0.67		
DELTA K MIN	A: 2.46	.0795			
	B: 4.19		1.16		
	C:				
	D:				
	2.50	.0819			
	3.00	.128			
	3.50	.212			
	4.00	.344			
	5.00	.825	1.52		
	6.00	1.72	2.61		
	7.00	3.17	4.81		
	8.00	5.30	8.72		
	9.00	8.22	15.1		
	10.00	11.9	24.6		
	13.00	27.7	73.6		
	16.00	55.8			
DELTA K MAX	A: 16.89	118.			
	B: 13.10		75.7		
	C:				
	D:				
ROOT MEAN SQUARE		21.89	16.75		
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25				
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION/HT: T851  
 FORM: 4.00" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: T-L  
 FREQUENCY: 2.00- 30.00 HZ  
 ENVIRONMENT: R. T., S. T. W.

YIELD STRENGTH: 57.3 KSI  
 ULT. STRENGTH: 83.7 KSI  
 SPECIMEN THK: 0.250- 1.000"  
 SPECIMEN WIDTH: 2.550"  
 REFERENCES: AL001

ALUM.  
 ALLOY

2048

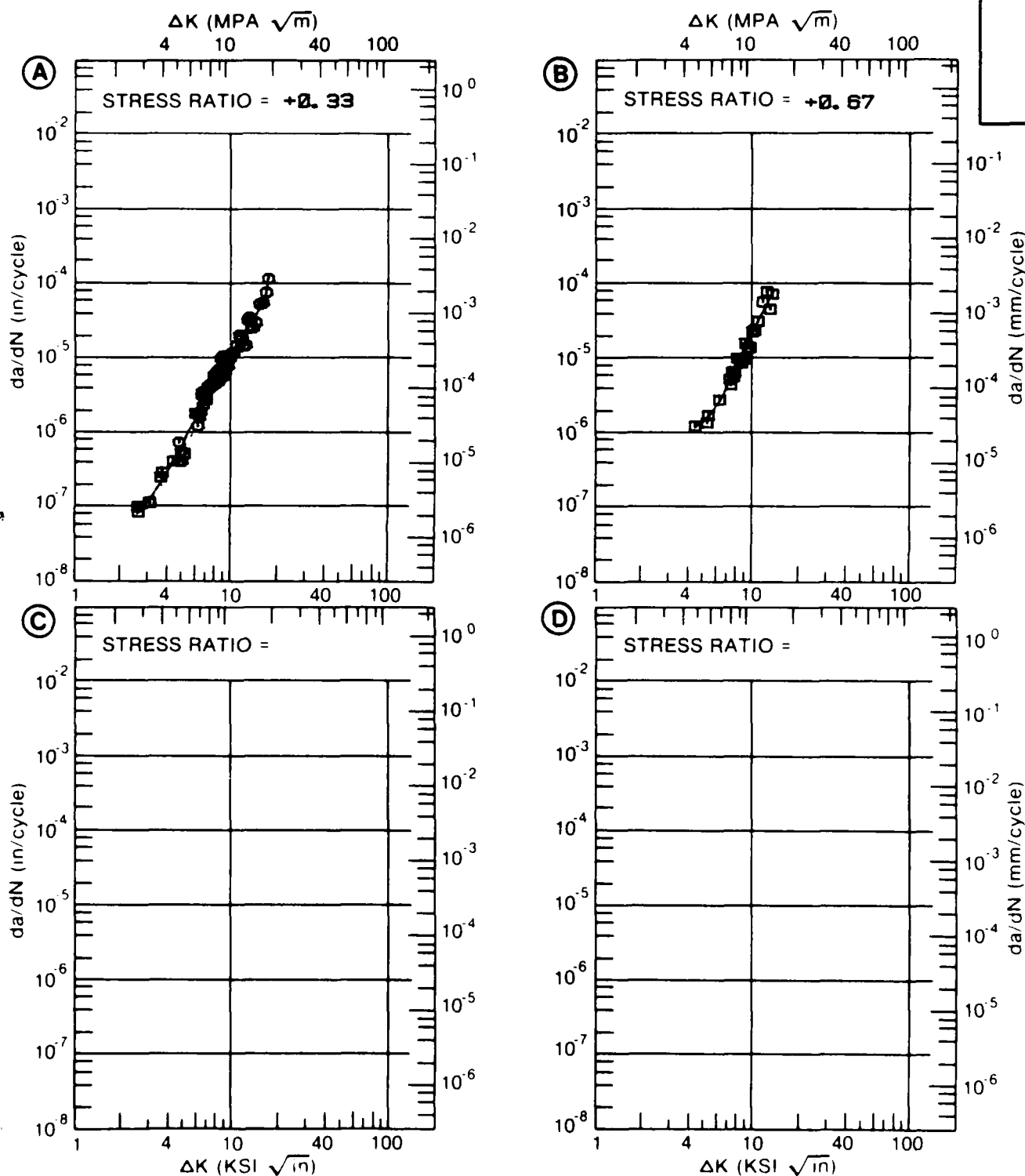


Figure 7.7.3.4

TABLE 7.7.3.5

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.7.3.5 INDICATING EFFECT

OF ENVIRONMENT

MATERIAL: ALUMINUM		2048			
CONDITION: T851					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R. T. DRY AIR	E= R. T. S. T. W.		
DELTA K A:	5.34	.416			
DELTA K B:	2.46		.0786		
MIN C:					
D:					
	2.50		.0816		
	3.00		.129		
	3.50		.208		
	4.00		.340		
	5.00		.841		
	6.00	.615	1.76		
	7.00	1.16	3.18		
	8.00	2.12	5.20		
	9.00	3.65	7.94		
	10.00	5.84	11.5		
	13.00	15.3	28.6		
	16.00	41.9	58.7		
DELTA K A:	18.10	148.			
DELTA K B:	16.89		70.9		
MAX C:					
D:					
ROOT MEAN SQUARE		26.02	23.71		
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25				
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION/HT: T851  
 FORM: 4.00" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: T-L  
 STRESS RATIO: +0.33  
 FREQUENCY: 2.00- 30.00 HZ

YIELD STRENGTH: 57.3 KSI  
 ULT. STRENGTH: 83.7 KSI  
 SPECIMEN THK: 0.250- 1.000"  
 SPECIMEN WIDTH: 2.550"  
 REFERENCES: AL001

ALUM.  
ALLOY

2048

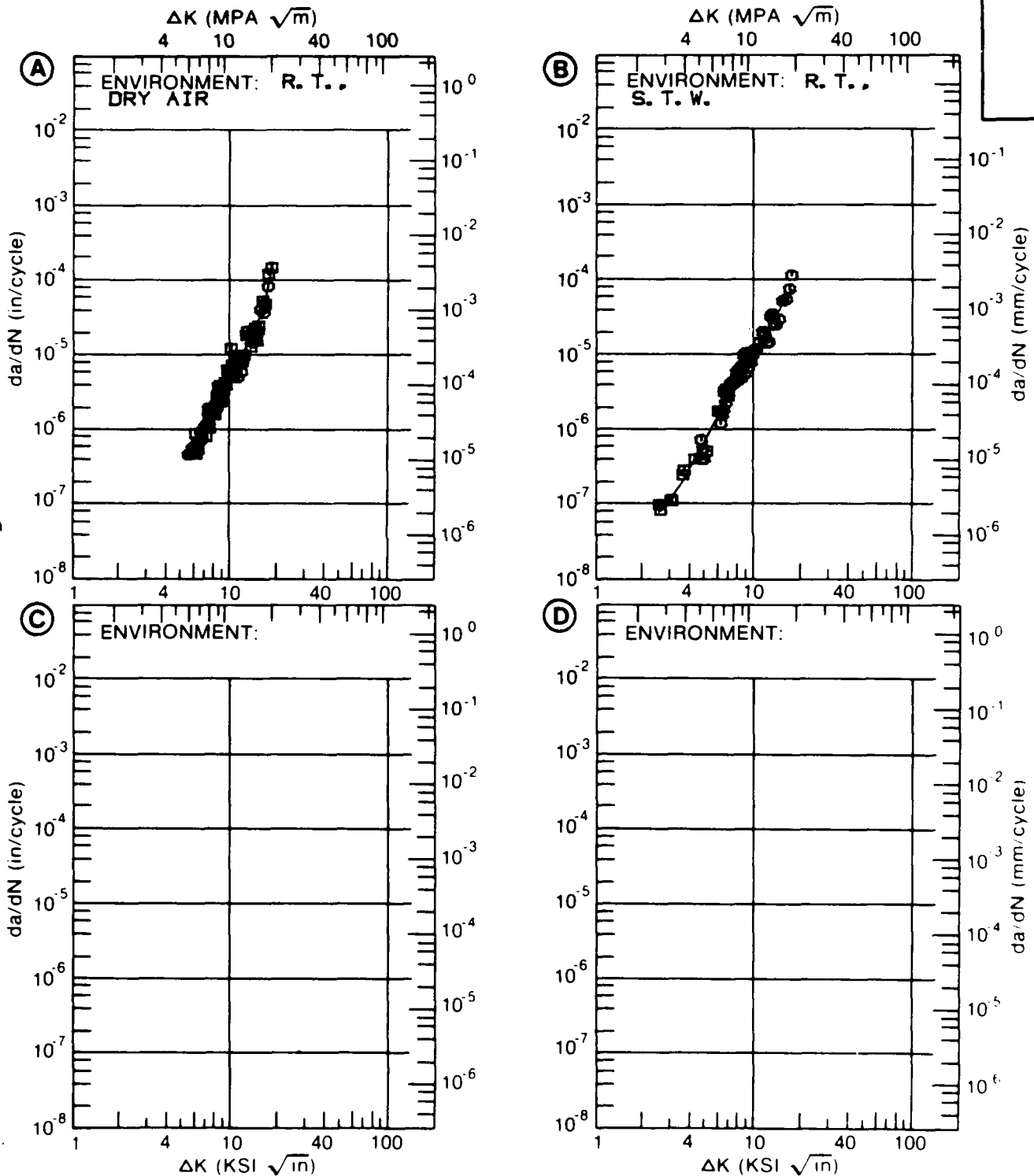


Figure 7.7.3.5

TABLE 7.7.3.6

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.7.3.6 INDICATING EFFECT  
OF ENVIRONMENT

MATERIAL: ALUMINUM		2048	
CONDITION: T851			
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)	
		A	B
		E= R. T. H. H. A.	E= R. T. S. T. W.
DELTA K MIN	A: 5.60	1.18	
	B: 4.50		1.08
	C:		
	D:		
	5.00		1.48
	6.00	1.70	2.51
	7.00	3.33	3.97
	8.00	5.39	6.06
	9.00	7.99	9.06
	10.00	11.5	13.4
	13.00	35.7	41.5
DELTA K MAX	A: 14.81	78.8	
	B: 15.41		101.
	C:		
	D:		
ROOT MEAN SQUARE		17	15.46
PERCENT ERROR			
LIFE	0.0-0.5		
PREDICTION	0.5-0.8		
RATIO	0.8-1.25		
SUMMARY	1.25-2.0		
(NP/NA)	>2.0		

CONDITION/HT: T851  
 FORM: 4.00" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: S-L  
 STRESS RATIO: +0.33  
 FREQUENCY: 2.00- 20.00 HZ

YIELD STRENGTH: 56.0 KSI  
 ULT. STRENGTH: 62.5 KSI  
 SPECIMEN THK: 1.000"  
 SPECIMEN WIDTH: 3.805"  
 REFERENCES: AL001

ALUM.  
ALLOY

2048

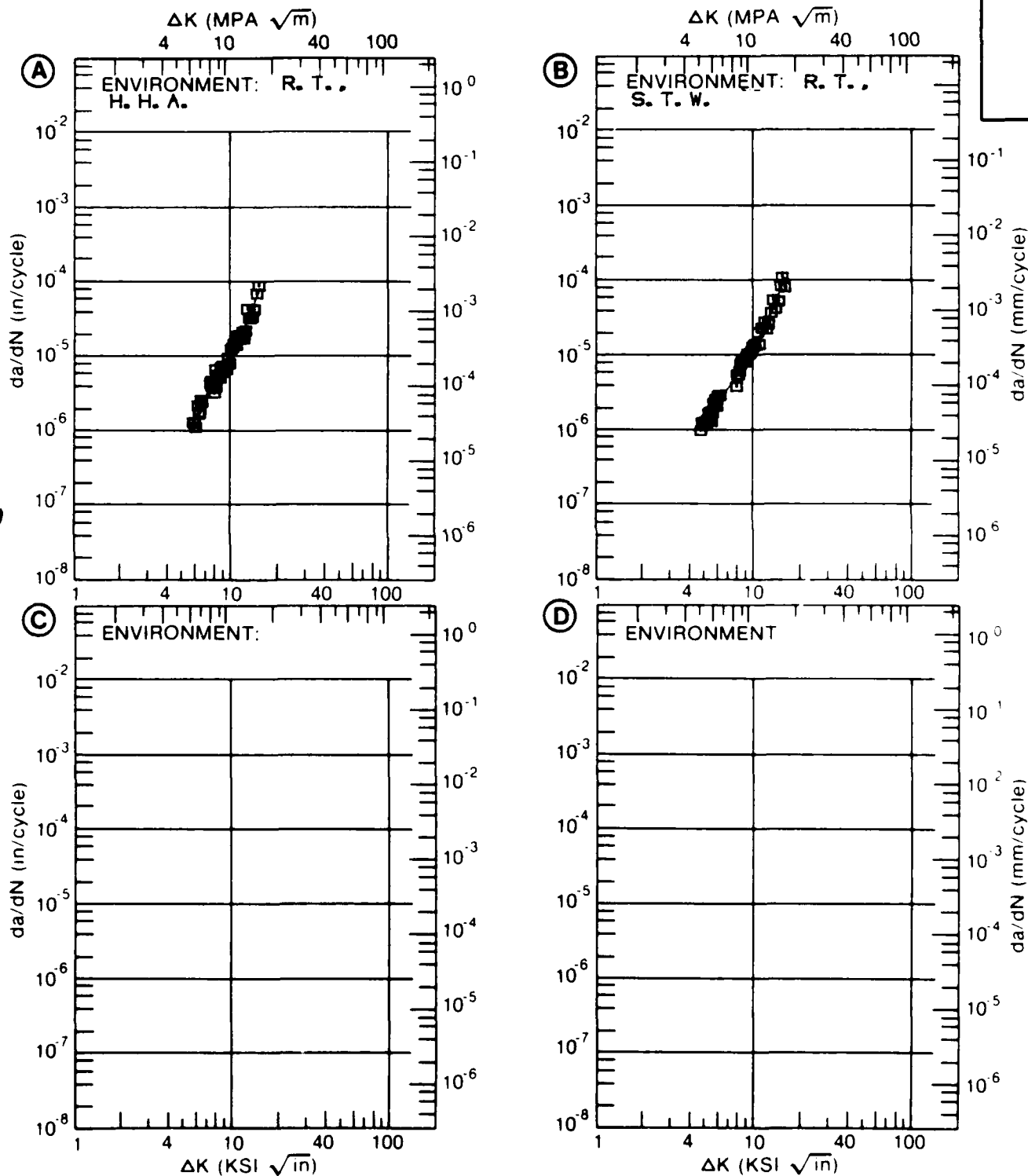


Figure 7.7.3.6

TABLE 7.8.1.1

MEAN PLANE STRAIN FRACTURE TOUGHNESS DATA OF  
ALUMINUM ALLOY 2124 AT ROOM TEMPERATURE

CONDITION/HT	MEAN K <sub>IC</sub> ± STANDARD (KSI SORT(IN)) DEVIATION		(NUMBER OF SPECIMENS)	
	PLATE			
	L-I	I-L	S-L	
T851	29 7 ± 2 8 (364)	25 1 ± 2 3 (362)	21 7 ± 2 1 (393)	
T851 (SP)	27 2 ± 4 7 (10)	23 1 ± 2 7 (7)	21 4 ± 3 2 (10)	
T851 (417)	20 9 ± 2 8 (27)	23 8 ± 2 4 (28)	21 3 ± 2 0 (19)	



TABLE 7.8.1.2

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR

ALUMINUM 2124

## TEST CONDITIONS

SPECIMEN  
ORIENTATION L-TENVIRONMENT L-H-A  
AT R-T

CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQ (Hz)	DELTA K LEVELS (KSI SQRT(IN))		FATIGUE CRACK GROWTH RATES (MICRO IN/CYCLE)			
				2.5	5	10	20	50	100
T851	PLATE	0.10	30.00		0.01	0.26	2.69	44.6	
T851	PLATE	0.50	30.00		0.09	0.68	7.07		

TABLE 7.8.1.3

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR

ALUMINUM 2124

TEST CONDITIONS

SPECIMEN ORIENTATION L-T

ENVIRONMENT: S.T.W.  
AT R.T

CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQ. (HZ)	DELTA K LEVELS: (KSI SQRT(IN))	2.5	5	10	20	50	100
T851	PLATE	0.10	1.00			0.26	6.04	50.4		
T851	PLATE	0.30	1.00			0.64	8.37	119		
T851	PLATE	0.50	1.00			1.07	9.52			

TABLE 7.8.1.4

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR

ALUMINUM 2124

TEST CONDITIONS

SPECIMEN ORIENTATION T L ENVIRONMENT H H A AT R T

CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQ (HZ)	DELTA K LEVELS (KSI SQRT(IN))	2 5	5	10	20	50	100
T851	PLATE	0 10	1 00			0 23	5 53	92 9		
T851	PLATE	0 10	6 00-33 00			0 28	5 16			
T851	PLATE	0 25	6 00-33 00		0 03	0 75	6 15			
T851	PLATE	0 50	1 00			1 22	15 4			
T851	PLATE	0 50	6 00-33 00		0 13	1 17	28 8			

TABLE 7.8.1.5

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR

ALUMINUM 2124

## TEST CONDITIONS

SPECIMEN  
ORIENTATION T-LENVIRONMENT S T W  
AT R T

CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQ (HZ)	DELTA K LEVELS (KSI SQRT(IN))	2.5	5	10	20	50	100
T851	PLATE	0.10	1.00			0.37	7.71			
T851	PLATE	0.30	1.00			0.59	10.0			
T851	PLATE	0.50	1.00			1.08	18.5			

TABLE 7.8.1.6  
FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR  
ALUMINUM 2124

TEST CONDITIONS

SPECIMEN  
ORIENTATION S-L

ENVIRONMENT S T W  
A T R T

CONDITION/H1	PRODUCT FORM	STRESS RATIO	FREQ (HZ)	DELTA K LEVELS (KSI SQRT(IN))	2	5	10	20	50	100
TBS1	PLATE	0.10	1.00			0.44	7.59	156		
TBS1	PLATE	0.30	1.00			0.94	12.4			
TBS1	PLATE	0.50	1.00			1.35	19.4			

TABLE 7.8.2.1

CONDITION	ALUMINUM				2124				K(1C)			
	--PRODUCT-- FORM	THICK (IN)	TEST SPECIMEN ORIENT (F)	YIELD STRENGTH (KSI)	SPECIMEN		CRACK LENGTH (IN)	2.5* (K(1C)/TVS)**2 (IN)	K(1C) MEAN (KSI*SQRT IN)	STAN DEV	DATE	REFER
					W	B						
T351 (417)	P	2 50	82 T-L	44.2	3.990	1.999	CT	2.146	1.82	37.70	1973	86213
T851	P	2 55	R.T.	52.8	6.047	2.504	CT	3.084	1.26	37.90	1978	MPC01
		5 00		55.0	3.000	1.501	CT	1.545	0.95	34.00	1979	GD011
		5 00		55.0	3.003	1.502	CT	1.632	0.93	33.70	1979	GD011
		6 00		55.1	2.994	1.499	CT	1.497	1.02	35.30	1978	MPC01
		5 00		55.2	3.011	1.500	CT	1.596	0.60	27.20	1978	MPC01
		6 00		55.5	3.006	1.498	CT	1.503	0.70	29.90	1978	MPC01
		5 50		56.3	3.010	1.498	CT	1.505	1.08	37.20	1978	MPC01
		6 00		56.5	3.014	1.499	CT	1.767	0.81	32.90	1978	MPC01
		5 50		56.7	2.999	1.500	CT	1.513	0.64	28.90	1980	RA001
		5 50		56.8	3.020	1.493	CT	1.480	0.67	29.70	1978	MPC01
		6 00		56.8	1.998	0.998	CT	1.048	0.57	27.20	1978	RA001
		5 00		56.9	1.986	0.997	CT	1.013	0.65	29.50	1978	MPC01
		5 12		56.9	3.000	1.498	CT	1.500	0.90	34.30	1978	MPC01
		6 00		57.1	3.000	1.500	CT	1.550	0.67	29.70	1972	84368
		6 00		57.1	3.000	1.500	CT	1.520	0.65	29.10	1978	MPC01
		5 25		57.2	3.004	1.498	CT	1.502	0.65	29.30	1978	MPC01
		5 00		57.2	3.029	1.496	CT	1.484	0.84	33.60	1978	MPC01
		4 90		57.3	3.000	1.498	CT	1.530	0.77	32.00	1978	RA002
		5 50		57.4	3.010	1.499	CT	1.565	0.78	32.30	1978	MPC01
		4 50		57.4	3.001	1.499	CT	1.522	0.95	35.40	1980	RA001
		5 00		57.6	3.000	1.499	CT	1.537	0.62	28.90	1979	RA001
		5 25		57.7	2.973	1.502	CT	1.516	0.75	32.30	1978	MPC01
		5 00		57.7	2.999	1.500	CT	1.499	0.63	29.10	1980	RA001
		5 50		57.8	3.022	1.497	CT	1.481	0.65	29.50	1978	MPC01
		5 00		57.8	2.997	1.497	CT	1.521	0.66	39.90	1979	RA001
		4 62		57.9	2.998	1.500	CT	1.499	0.93	35.50	1978	MPC01
		5 50		58.0	3.010	1.497	CT	1.445	0.60	28.80	1978	MPC01
		5 50		58.1	2.971	1.498	CT	1.456	0.57	28.00	1978	MPC01
		5 25		58.1	3.026	1.500	CT	1.513	0.90	35.20	1978	MPC01
		5 00		58.1	3.000	1.498	CT	1.573	0.74	31.79	1978	RA001
		5 50		58.1	2.984	1.500	CT	1.522	0.84	33.90	1978	MPC01
		4 90		58.1	3.005	1.500	CT	1.498	0.57	27.90	1978	RA002
		4 25		58.2	2.999	1.499	CT	1.551	0.65	29.70	1980	RA001
		5 00		58.2	3.002	1.500	CT	1.561	0.48	25.90	1978	MPC01
		5 50		58.3	2.988	1.499	CT	1.464	0.57	28.40	1978	MPC01

TABLE 7.8.2.1 (Con't)

CONDITION	--PRODUCT--			TEST SPECIMEN ORIENT	YIELD STRENGTH (KSI)	ALUMINUM 2124			K(1C)		K(1C) MEAN DEV (KSI*SQRT IN)	K(1C) STAN DEV	DATE	REFER
	FORM	THICK (IN)	THICK (IN)			WIDTH (IN)	SPECIMEN THICK (IN)	DESIGN	CRACK LENGTH (IN)	2.5* K(1C)/TYS)**2 (IN)				
1851	P	5.00	R.T	L-T	58.4	2.980	1.498	CT	1.490	0.67	30.90		1978	MPC01
		3.50			58.7	3.004	1.498	CT	1.502	0.72	31.90		1978	MPC01
		2.50			58.7	1.592	0.998	CT	1.016	0.50	26.80		1978	MPC01
		2.50			58.8	3.000	1.498	CT	1.556	0.60	28.90		1980	RA001
		6.00			58.8	2.000	0.995	CT	0.975	0.97	36.70		1980	RA001
		4.50			58.9	2.982	1.498	CT	1.491	0.75	32.70		1978	MPC01
		6.00			58.9	3.014	1.499	CT	1.537	0.67	30.90		1978	MPC01
		4.50			59.0	3.016	1.499	CT	1.478	0.70	31.60		1978	MPC01
		5.50			59.1	2.984	1.501	CT	1.523	0.57	28.60		1978	MPC01
		4.55			59.1	3.001	1.496	CT	1.517	0.75	32.40		1980	RA001
		5.50			59.1	3.000	1.501	CT	1.530	0.70	31.50		1978	MPC01
		6.00			59.2	2.977	1.495	CT	1.518	0.70	31.80		1978	MPC01
		6.00			59.3	2.986	1.493	CT	1.493	0.55	27.90		1978	MPC01
		4.31			59.3	2.000	1.000	CT	1.000	0.50	26.50		1972	84368
		4.31			59.3	2.000	1.000	CT	0.990	0.52	27.00		1972	84368
		4.00			59.3	3.000	1.499	CT	1.542	0.61	29.50		1978	RA001
		4.90			59.4	2.990	1.368	CT	1.465	0.57	29.00		1978	MPC01
		4.00			59.4	2.000	1.000	CT	1.000	0.61	29.40		1972	84368
		4.00			59.4	2.000	1.000	CT	1.000	0.59	28.90		1972	84368
		4.62			59.5	2.988	1.498	CT	1.464	0.62	30.10		1978	MPC01
	5.25			59.6	3.018	1.501	CT	1.509	0.81	34.50		1978	MPC01	
	6.00			59.6	1.998	0.998	CT	1.033	0.73	32.30		1978	RA001	
	4.00			59.6	2.999	1.499	CT	1.527	0.62	29.90		1980	RA001	
	4.00			59.6	3.002	1.498	CT	1.542	0.88	35.50		1980	RA001	
	4.50			59.6	2.997	1.498	CT	1.532	0.79	33.59		1979	RA001	
	4.50			59.6	3.012	1.499	CT	1.476	0.70	31.70		1978	MPC01	
	1.81			59.7	3.011	1.498	CT	1.626	0.60	29.80		1978	MPC01	
	4.50			59.8	3.000	1.500	CT	1.530	0.76	33.10		1972	84368	
	4.50			59.8	3.000	1.500	CT	1.510	0.71	31.90		1972	84368	
	6.00			59.9	3.004	1.499	CT	1.532	0.70	31.80		1978	MPC01	
	4.00			59.9	3.012	1.497	CT	1.566	0.70	32.30		1978	MPC01	
	5.00			59.9	3.004	1.499	CT	1.532	0.60	29.80		1978	MPC01	
	3.00			59.9	2.994	1.406	CT	1.529	0.66	30.79		1980	RA001	
	3.00			59.9	3.001	1.376	CT	1.484	0.60	29.40		1980	RA001	
	4.00			60.0	3.000	1.499	CT	1.489	0.62	29.90		1980	RA001	
	5.50			60.1	2.996	1.502	CT	1.528	0.97	29.40		1978	MPC01	
	5.50			60.1	3.012	1.501	CT	1.506	0.52	27.70		1978	MPC01	
	4.50			60.1	3.000	1.495	CT	1.533	0.69	31.60		1978	MPC01	
	2.50			60.3	3.002	1.102	CT	1.510	0.44	25.50		1980	RA001	

TABLE 7.8.2.1 (Con't)

CONDITION	ALUMINUM		YIELD STRENGTH (KSI)	TEST SPECIMEN ORIENT		THICKNESS (IN)		SPECIMEN DESIGN		CRACK LENGTH (IN)		K(1C) 2.5*		K(1C) MEAN DEV		DATE	REFER
	FORM	THICK (IN)		TEMP (F)	L-T	W	H	THICK (IN)	DESIGN	A	B	(IN)	(IN)	(KSI*SQRT IN)	STAN DEV		
T851	P	4 50	60.3	R.T	L-T	3.000	1.499	CT	1.536	0.57	28.79	1978	RA002				
		5 00	60.4			2.000	1.001	CT	1.011	0.56	28.79	1978	RA002				
		5 50	60.4			3.016	1.500	CT	1.508	0.52	28.00	1978	MPC01				
		5 25	60.4			2.994	1.500	CT	1.497	0.75	33.50	1978	MPC01				
		5 50	60.4			3.002	1.500	CT	1.531	0.62	30.30	1978	MPC01				
		2 50	60.5			3.004	1.499	CT	1.523	0.44	25.40	1980	RA001				
		4 50	60.5			2.978	1.500	CT	1.489	0.65	31.00	1978	MPC01				
		5 50	60.6			3.004	1.500	CT	1.532	0.52	28.10	1978	MPC01				
		3 54	60.6			2.994	1.497	CT	1.587	0.62	30.70	1978	MPC01				
		5 50	60.6			3.026	1.500	CT	1.513	0.60	30.20	1978	MPC01				
		5 50	60.6			2.998	1.500	CT	1.529	0.48	26.90	1978	MPC01				
		2 75	60.6			3.001	1.499	CT	1.591	0.48	26.79	1978	RA002				
		3 00	60.6			3.000	1.400	CT	1.526	0.64	30.90	1980	RA001				
		5 50	60.8			3.008	1.497	CT	1.534	0.48	27.10	1978	MPC01				
		3 62	60.8			3.006	1.496	CT	1.473	0.65	31.40	1978	MPC01				
		3 50	60.8			3.004	1.496	CT	1.492	0.42	25.00	1980	RA001				
		5 50	60.9			2.980	1.500	CT	1.520	0.48	27.00	1978	MPC01				
		4 31	60.9			3.004	1.498	CT	1.592	0.52	28.10	1978	MPC01				
		5 00	60.9			3.010	1.500	CT	1.535	0.55	29.10	1978	MPC01				
		5 50	60.9			3.028	1.501	CT	1.514	0.70	32.70	1978	MPC01				
		4 00	60.9			2.999	1.499	CT	1.544	0.56	28.90	1978	RA001				
		6 00	61.0			2.998	1.500	CT	1.559	0.70	32.50	1978	MPC01				
		3 50	61.0			3.004	1.499	CT	1.502	0.72	33.00	1978	MPC01				
		3 50	61.0			2.982	1.499	CT	1.461	0.70	32.50	1978	MPC01				
	5 50	61.1			3.032	1.500	CT	1.516	0.48	26.90	1978	MPC01					
	4 25	61.1			1.985	0.998	CT	1.032	0.78	34.60	1978	MPC01					
	5 50	61.1			3.000	1.500	CT	1.500	0.53	28.10	1972	84368					
	5 50	61.1			3.000	1.500	CT	1.500	0.55	28.80	1972	84368					
	4 00	61.1			3.000	1.499	CT	1.571	0.73	33.09	1979	RA001					
	4 00	61.2			3.000	1.497	CT	1.586	0.92	37.20	1978	RA001					
	4 00	61.2			3.012	1.496	CT	1.536	0.67	31.90	1978	MPC01					
	2 70	61.3			2.008	1.000	CT	1.024	0.81	35.50	1978	MPC01					
	4 90	61.3			3.002	1.499	CT	1.550	0.50	27.50	1978	RA002					
	3 00	61.3			3.002	1.497	CT	1.522	0.65	31.40	1980	RA001					
	6 00	61.4			2.980	1.499	CT	1.520	0.70	32.80	1978	MPC01					
	2 50	61.4			3.020	1.186	CT	1.540	0.55	29.10	1978	MPC01					
	2 50	61.4			2.012	0.998	CT	1.006	0.44	26.00	1978	MPC01					
	5 50	61.4			3.031	1.500	CT	1.546	0.52	28.80	1978	MPC01					
	4 90	61.5			2.976	1.494	CT	1.488	0.48	27.50	1978	MPC01					



TABLE 7.8.2.1 (Con't)

CONDITION	--PRODUCT--			TEST SPECIMEN ORIENT	YIELD STRENGTH (KSI)	ALUMINUM 2124			K(IIC)		K(IIC) STAN	DATE	REFER
	FORM	THICK (IN)	THICK (F)			-----SPECIMEN-----			CRACK LENGTH (IN)	2.5* (K(IIC)/TYS)**2 (IN)			
						WIDTH (IN)	THICK (IN)	DESIGN					
T851	P	4.00	R.T.	L-T	61.5	3.001	1.496	CT	1.610	0.65	31.50	1979	RA001
		3.00			61.5	3.002	1.379	CT	1.551	0.82	35.40	1980	RA001
		5.50			61.6	3.026	1.500	CT	1.513	0.52	28.80	1978	MPC01
		4.00			61.6	2.883	1.499	CT	1.550	0.55	29.20	1978	MPC01
		5.50			61.6	3.018	1.501	CT	1.509	0.42	25.70	1978	MPC01
		5.50			61.6	2.973	1.500	CT	1.516	0.48	27.40	1978	MPC01
		5.00			61.6	2.979	1.501	CT	1.549	0.57	30.00	1978	MPC01
		2.00			61.8	2.994	1.500	CT	1.537	0.59	30.20	1980	RA001
		3.00			61.9	3.000	1.449	CT	1.536	0.63	31.29	1980	RA001
		5.50			61.9	2.994	1.501	CT	1.527	0.52	29.00	1978	MPC01
		2.50			61.9	3.001	1.499	CT	1.513	0.48	27.29	1980	RA001
		4.25			61.9	3.018	1.502	CT	1.539	0.57	29.80	1978	MPC01
		5.50			61.9	2.998	1.501	CT	1.529	0.55	29.10	1978	MPC01
		3.00			61.9	2.980	1.245	CT	1.490	0.65	31.70	1978	MPC01
		5.50			61.9	3.030	1.501	CT	1.515	0.48	27.30	1978	MPC01
		5.00			61.9	3.020	1.502	CT	1.540	0.57	30.00	1978	MPC01
		4.00			62.0	3.008	1.498	CT	1.504	0.78	35.30	1978	MPC01
		5.00			62.0	2.991	1.499	CT	1.585	0.57	30.10	1978	MPC01
		5.50			62.0	3.016	1.501	CT	1.508	0.40	25.40	1978	MPC01
		5.50			62.0	3.012	1.500	CT	1.506	0.42	25.70	1978	MPC01
		3.50			62.0	3.001	1.490	CT	1.572	0.73	33.59	1979	RA001
		4.00			62.0	3.014	1.493	CT	1.477	0.67	32.70	1978	MPC01
		5.50			62.1	2.992	1.500	CT	1.526	0.46	27.10	1978	MPC01
		5.50			62.1	2.978	1.500	CT	1.519	0.55	29.60	1978	MPC01
		5.25			62.1	2.980	1.500	CT	1.520	0.62	31.30	1978	MPC01
		5.50			62.1	2.978	1.500	CT	1.519	0.50	28.20	1978	MPC01
		4.50			62.1	3.014	1.500	CT	1.507	0.60	30.80	1978	MPC01
		5.50			62.1	3.008	1.500	CT	1.504	0.46	27.20	1978	MPC01
		5.50			62.1	2.986	1.503	CT	1.523	0.57	29.90	1978	MPC01
		4.50			62.1	3.006	1.501	CT	1.503	0.60	30.80	1978	MPC01
		5.50			62.1	2.998	1.500	CT	1.559	0.55	29.30	1978	MPC01
		3.54			62.2	3.030	1.499	CT	1.515	0.65	32.10	1978	MPC01
		4.00			62.2	3.004	1.478	CT	1.562	0.52	29.20	1978	MPC01
		3.00			62.2	2.998	1.300	CT	1.485	0.63	31.29	1978	RA002
		1.75			62.2	3.000	1.499	CT	1.528	0.53	28.79	1980	RA001
		4.50			62.3	3.004	1.501	CT	1.502	0.55	29.90	1978	MPC01
		4.50			62.3	3.004	1.501	CT	1.502	0.67	32.80	1978	MPC01
		5.50			62.3	2.988	1.500	CT	1.524	0.42	25.80	1978	MPC01
		5.50			62.4	3.026	1.500	CT	1.513	0.46	27.30	1978	MPC01

TABLE 7.8.2.1 (Con't)

CONDITION	--PRODUCT--		TEST SPECIMEN ORIENT	YIELD STRENGTH (KSI)	ALUMINUM		SPECIMEN		CRACK LENGTH (IN)	K(1C)/TYS)*2 (IN)	K(1C) MEAN DEV (KSI*SQRT IN)	K(1C) STAN DEV	DATE	REFER
	FORM	THICK (IN)			THICK (IN)	WIDTH (IN)	THICK (IN)	DESIGN						
TBS1	P	3 25	R. T.	L-T	62.4	2.990	1.498	CT	1.435	0.72	34.00		1978	MP001
		2 50			62.5	3.000	1.499	CT	1.600	0.60	30.79		1978	RA002
		6 00			62.5	3.010	1.499	CT	1.565	0.72	34.00		1978	MP001
		4 90			62.5	3.000	1.499	CT	1.603	0.50	28.00		1978	RA002
		5 00			62.6	3.024	1.500	CT	1.542	0.48	28.00		1978	MP001
		5 50			62.6	3.000	1.500	CT	2.100	0.56	29.70		1978	GD003
		5 50			62.6	3.000	1.500	CT	2.100	0.62	31.20		1978	GD003
		5 50			62.6	2.986	1.500	CT	1.523	0.52	28.80		1978	MP001
		5 00			62.6	3.016	1.500	CT	1.508	0.44	28.90		1978	MP001
		4 75			62.6	3.000	1.500	CT	1.546	0.66	32.20		1980	RA001
		5 50			62.6	3.000	1.500	CT	2.100	0.58	30.20		1978	GD003
		3 12			62.7	3.015	1.377	CT	1.447	0.65	32.00		1978	MP001
		3 12			62.7	3.030	1.498	CT	1.515	0.62	31.60		1978	MP001
		3 00			62.7	3.002	1.188	CT	1.581	0.51	28.50		1978	RA002
		3 75			62.8	3.029	1.497	CT	1.575	0.52	28.90		1978	MP001
		4 00			62.8	3.001	1.251	CT	1.525	0.47	27.50		1980	RA001
		5 00			62.9	3.032	1.500	CT	1.516	0.48	28.20		1978	MP001
		5 00			62.9	2.972	1.500	CT	1.486	0.46	27.20		1978	MP001
		2 50			62.9	2.000	1.000	CT	----	0.67	32.10		1974	88742
		5 50			62.9	3.024	1.500	CT	1.512	0.48	28.00		1978	MP001
		3 12			62.9	3.002	1.498	CT	1.514	0.67	32.59		1980	RA001
		4 25			62.9	3.039	1.500	CT	1.550	0.48	27.80		1978	MP001
		2 50			62.9	2.000	1.000	CT	----	0.74	33.70		1974	88742
		2 50			62.9	2.000	1.000	CT	----	0.67	32.00		1974	88742
		3 12			63.0	3.025	1.498	CT	1.482	0.62	32.10		1978	MP001
		4 25			63.0	3.010	1.500	CT	1.535	0.52	29.10		1978	MP001
		6 00			63.1	3.002	1.499	CT	1.561	0.62	31.70		1978	MP001
		2 00			63.1	3.006	1.500	CT	1.503	0.48	27.90		1978	MP001
		2 50			63.1	2.970	1.201	CT	1.574	0.50	28.40		1978	MP001
		2 00			63.1	3.020	1.499	CT	1.510	0.55	30.20		1978	MP001
		4 25			63.2	2.977	1.500	CT	1.518	0.46	27.40		1978	MP001
		4 50			63.2	3.016	1.500	CT	1.508	0.55	30.20		1978	MP001
		4 50			63.2	2.984	1.500	CT	1.492	0.57	30.50		1978	MP001
		5 00			63.2	3.008	1.500	CT	1.534	0.60	31.40		1978	MP001
		4 50			63.2	3.012	1.500	CT	1.506	0.60	31.00		1978	MP001
		2 00			63.2	3.000	1.497	CT	1.591	0.50	28.50		1978	RA001
		2 75			63.2	3.002	1.483	CT	1.520	0.50	28.29		1980	RA001
		4 50			63.4	3.022	1.499	CT	1.511	0.59	30.30		1978	MP001
		4 50			63.4	3.000	1.500	CT	1.520	0.44	26.70		1972	R4368

TABLE 7.8.2.1 (Con't)

CONDITION	--PRODUCT--			TEST SPECIMEN		YIELD (KSI)	ALUMINUM			K (IC)			K (IC) MEAN (KSI*SQRT IN)	K (IC) STAN DEV	DATE	REFER			
	FORM	THICK (IN)	TEMP (F)	ORIENT	STRENGTH		-----SPECIMEN-----			CRACK LENGTH (IN)	2.5* (IN)								
							WIDTH (IN)	THICK (IN)	DESIGN										
TBS:	P	4	50	R	T	L-T	63.4	3	000	1	500	CT	1	540	0.46	27	20	1972	84368
		1	50				63.4	3	000	1	483	CT	1	568	0.59	30	79	1980	RA001
		4	25				63.5	2	986	1	500	CT	1	523	0.50	30	60	1978	MP001
		4	00				63.5	3	014	1	499	CT	1	567	0.60	31	60	1978	MP001
		1	75				63.5	3	004	1	500	CT	1	517	0.53	29	29	1978	RA002
		1	75				63.6	3	001	1	496	CT	1	583	0.52	29	10	1978	RA001
		3	00				63.6	1	998	0	999	CT	1	019	0.43	26	50	1979	RA001
		2	75				63.6	2	999	1	496	CT	1	543	0.54	29	60	1980	RA001
		3	00				63.6	2	986	1	499	CT	1	523	0.55	29	90	1978	MP001
		3	12				63.6	2	985	1	499	CT	1	582	0.70	33	80	1978	MP001
		2	50				63.7	3	002	1	499	CT	1	561	0.52	29	70	1978	MP001
		4	00				63.7	3	019	1	499	CT	1	570	0.42	26	70	1978	MP001
		2	50				63.7	3	001	1	495	CT	1	607	0.53	29	40	1978	RA002
		2	00				63.8	3	016	1	498	CT	1	508	0.46	27	60	1978	MP001
		2	50				63.8	3	010	1	498	CT	1	535	0.52	29	40	1978	MP001
		3	62				63.8	2	995	1	499	CT	1	529	0.49	28	29	1980	RA001
		2	50				63.8	3	000	1	499	CT	1	584	0.56	30	20	1978	RA002
		3	50				63.9	3	000	1	500	CT	1	520	0.61	31	50	1972	84368
		2	35				63.9	3	001	1	500	CT	1	581	0.51	29	00	1978	RA002
		3	00				63.9	3	000	1	397	CT	1	532	0.54	29	90	1980	RA001
		4	25				63.9	3	014	1	501	CT	1	507	0.62	32	50	1978	MP001
		3	50				63.9	3	000	1	500	CT	1	510	0.61	31	60	1972	84368
		3	00				64.0	2	996	1	400	CT	1	618	0.50	29	40	1978	MP001
		4	25				64.0	3	020	1	500	CT	1	510	0.62	32	30	1978	MP001
		3	00				64.0	3	021	1	247	CT	1	450	0.44	27	50	1978	MP001
		4	90				64.0	3	000	1	499	CT	1	572	0.56	30	29	1978	RA002
		5	50				64.0	2	977	1	500	CT	1	518	0.46	27	90	1978	MP001
		3	00				64.1	2	999	1	488	CT	1	574	0.69	33	70	1978	RA001
		2	50				64.1	3	000	1	499	CT	1	623	0.56	30	40	1978	RA002
		2	35				64.1	1	498	0	751	CT	1	623	0.20	18	29	1978	RA002
		3	00				64.2	3	000	1	499	CT	1	548	0.57	30	70	1980	RA001
		4	25				64.2	3	024	1	500	CT	1	512	0.46	27	90	1978	MP001
		2	00				64.2	2	000	1	002	CT	1	008	0.43	26	79	1978	RA002
		3	50				64.2	2	999	1	499	CT	1	550	0.67	33	40	1978	RA001
		2	25				64.2	2	989	0	999	CT	1	554	0.36	25	00	1978	MP001
	3	00				64.2	3	002	1	495	CT	1	533	0.40	25	70	1980	RA001	
	1	57				64.2	3	000	1	500	CT	1	590	0.46	27	40	1972	84368	
	3	62				64.3	2	978	1	499	CT	1	608	0.46	27	80	1978	MP001	
	3	54				64.3	3	014	1	498	CT	1	507	0.48	28	50	1978	MP001	

TABLE 7.8.2.1 (Con't)

CONDITION	ALUMINUM				2124			K(1C)			K(1C) STAN			DATE	REFER
	--PRODUCT--		YIELD (KSI)	TEST SPECIMEN ORIENT	-----SPECIMEN-----			CRACK LENGTH (IN)	2.5* (K(1C)/TVS)**2 (IN)	K(1C) MEAN (KSI*SQRT IN)	DEV				
	FORM	THICK (IN)			WIDTH (IN)	THICK (IN)	DESIGN								
					M	B	A								
1851	P	2 35	R.T	L-T	3.001	1.499	CT	1.527	0.51	29.20			1980 RA001		
		4 25			3.008	1.500	CT	1.534	0.55	30.80			1978 MPC01		
		3 00			2.975	1.300	CT	1.636	0.48	28.60			1978 MPC01		
		2 00			3.016	1.499	CT	1.538	0.50	29.50			1978 MPC01		
		4 50			3.024	1.500	CT	1.512	0.62	32.20			1978 MPC01		
		1 12			3.000	1.140	CT	1.537	0.53	29.79			1980 RA001		
		1 50			2.990	1.493	CT	1.525	0.57	31.60			1978 MPC01		
		4 25			3.008	1.500	CT	1.534	0.50	29.60			1978 MPC01		
		2 50			3.004	1.498	CT	1.546	0.44	27.10			1980 RA001		
		2 50			2.010	0.998	CT	1.005	0.34	24.00			1978 MPC01		
		2 50			2.510	1.249	CT	1.280	0.50	29.40			1978 MPC01		
		2 50			2.999	1.494	CT	1.536	0.39	25.70			1980 RA001		
		2 50			2.498	1.230	CT	1.274	0.48	28.50			1978 MPC01		
		4 25			3.026	1.499	CT	1.543	0.60	31.80			1978 MPC01		
		2 50			3.014	1.102	CT	1.567	0.40	26.50			1978 MPC01		
		2 75			3.024	1.500	CT	1.542	0.70	34.80			1978 MPC01		
		4 25			3.028	1.501	CT	1.514	0.62	32.50			1978 MPC01		
		3 00			3.000	1.499	CT	1.558	0.40	26.00			1979 RA001		
		2 00			3.002	1.496	CT	1.554	0.40	26.10			1980 RA001		
		2 20			3.001	1.498	CT	1.554	0.52	29.70			1980 RA001		
		2 50			2.010	1.000	CT	1.005	0.55	30.60			1978 MPC01		
		2 50			2.508	1.250	CT	1.279	0.42	27.20			1978 MPC01		
		2 50			2.486	1.250	CT	1.268	0.42	26.90			1978 MPC01		
		3 25			3.016	1.497	CT	1.508	0.70	34.40			1978 MPC01		
	1 81			2.982	1.493	CT	1.521	0.52	29.90			1978 MPC01			
	2 75			2.997	1.498	CT	1.610	0.60	32.00			1980 RA001			
	4 90			3.000	1.500	CT	1.591	0.49	28.90			1978 RA002			
	2 00			3.017	1.499	CT	1.569	0.57	31.20			1978 MPC01			
	0 62			1.006	0.500	CT	0.503	0.46	28.40			1978 MPC01			
	1 50			3.000	1.479	CT	1.532	0.52	29.90			1980 RA001			
	2 00			3.000	1.496	CT	1.581	0.59	31.79			1980 RA001			
	4 00			3.979	2.000	CT	2.069	0.50	29.40			1978 MPC01			
	2 00			2.008	0.999	CT	1.044	0.44	27.60			1978 MPC01			
	2 50			2.999	1.498	CT	1.555	0.48	28.70			1980 RA001			
	1 75			2.999	1.500	CT	1.567	0.61	32.30			1980 RA001			
	1 57			3.000	1.500	CT	1.530	0.73	35.20			1972 B4368			
	3 00			3.008	1.400	CT	1.594	0.48	28.90			1978 MPC01			
	1 57			3.000	1.500	CT	1.480	0.69	34.20			1972 B4368			
	3 00			2.001	0.997	CT	1.012	0.54	30.50			1978 RA002			

TABLE 7.8.2.1 (Con't)

CONDITION	--PRODUCT--			TEST SPECIMEN ORIENT	YIELD STRENGTH (KSI)	ALUMINUM			K (IC)			K (IC) STAN	DATE	REFER	
	FORM	THICK (IN)	TEMP (F)			SPECIMEN			CRACK LENGTH (IN)	2.5* K (IC)/(TYS)**2 (IN)	K (IC) MEAN DEV (KSI*SQRT IN)				
						WIDTH (IN)	THICK (IN)	DESIGN							
						W	B	A							
T851	P	2.35	R. T.	L-Y	65.2	2.016	1.001	CT	0.988	0.40	26.70	1978	MPC01		
		4.00			65.2	4.039	1.977	CT	2.060	0.48	29.10	1978	MPC01		
		2.50			65.3	3.000	1.499	CT	1.522	0.45	28.00	1980	RA001		
		2.00			65.3	1.994	0.999	CT	1.017	0.42	27.30	1978	MPC01		
		2.50			65.4	2.000	1.000	CT	1.010	0.44	27.30	1972	B4368		
		2.04			65.4	1.900	0.750	CT	0.740	0.27	21.30	1972	B4368		
		2.50			65.4	2.000	1.000	CT	1.020	0.43	27.10	1972	B4368		
		1.81			65.4	2.012	0.978	CT	1.046	0.44	27.60	1978	MPC01		
		2.00			65.4	3.003	1.501	CT	1.568	0.54	30.40	1978	RA002		
		3.50			65.4	3.000	1.500	CT	1.540	0.44	27.90	1972	B4368		
		2.04			65.4	1.500	0.750	CT	0.750	0.26	21.10	1972	B4368		
		3.00			65.4	2.975	1.245	CT	1.517	0.55	30.80	1978	MPC01		
		2.00			65.4	3.030	1.500	CT	1.515	0.48	29.00	1978	MPC01		
		2.50			65.4	2.970	1.498	CT	1.525	0.59	30.90	1978	MPC01		
		3.00			65.5	1.997	0.998	CT	1.014	0.59	32.00	1979	RA001		
		2.50			65.5	1.998	0.998	CT	0.979	0.50	29.50	1978	MPC01		
		4.00			65.5	3.000	1.500	CT	1.580	0.31	23.00	1972	B4368		
		4.00			65.5	3.000	1.500	CT	1.560	0.30	22.50	1972	B4368		
		2.50			65.6	4.000	2.000	CT	2.100	0.78	36.70	1972	B4368		
		2.50			65.6	4.000	2.000	CT	2.100	0.77	36.40	1972	B4368		
		3.00			65.6	3.001	1.478	CT	1.574	0.49	29.20	1978	RA001		
		5.50			65.7	3.018	1.500	CT	1.509	0.44	28.10	1978	MPC01		
		2.50			65.7	2.983	1.499	CT	1.551	0.42	27.00	1978	MPC01		
		1.12			65.7	3.018	1.435	CT	1.479	0.34	24.70	1978	MPC01		
	3.00			65.8	3.028	1.400	CT	1.605	0.62	33.10	1978	MPC01			
	1.75			65.9	3.003	1.501	CT	1.583	0.60	32.50	1978	RA002			
	2.40			65.9	3.003	1.498	CT	1.534	0.49	29.40	1980	RA001			
	2.25			66.0	2.016	0.999	CT	1.068	0.38	26.30	1978	MPC01			
	1.50			66.0	3.000	1.500	CT	----	0.52	30.00	1982	NC003			
	3.00			66.0	2.400	0.795	CT	1.356	0.60	32.40	1972	B4306			
	1.25			66.0	2.006	0.998	CT	1.083	0.44	28.20	1978	MPC01			
	2.50			66.0	3.003	1.497	CT	1.520	0.51	30.10	1978	RA002			
	1.50			66.0	3.000	1.500	CT	----	0.52	30.00	1982	NC003			
	1.50			66.1	3.001	1.496	CT	1.564	0.54	31.00	1980	RA001			
	2.50			66.2	4.000	2.000	CT	2.150	0.69	33.70	1972	B4368			
	2.50			66.2	4.000	2.000	CT	2.160	0.69	34.90	1972	B4368			
	2.00			66.2	3.000	1.500	CT	1.550	0.52	30.30	1972	B4368			
	1.50			66.2	3.018	1.478	CT	1.509	0.50	29.60	1978	MPC01			
	1.12			66.2	2.004	1.000	CT	1.022	0.46	28.90	1978	MPC01			

TABLE 7.8.2.1 (Con't)

CONDITION	--PRODUCT--		TEST SPECIMEN		YIELD STRENGTH (KSI)	ALUMINUM			K (IC)		K (IC) STAM	DATE	REFER	
	FORM	THICK (IN)	TEMP (F)	ORIENT		WIDTH (IN)	THICK (IN)	DESIGN	CRACK LENGTH (IN)	2.5* (IN)				K (IC) MEAN (KSI*SQRT IN)
T851	P	2.00		R	T	L-T	3.000	1.500	CT	1.560	0.53	30.40	1972	84368
		1.50					2.976	1.448	CT	1.528	0.46	29.00	1978	MPC01
		0.87					1.900	0.750	CT	0.750	0.38	26.30	1978	MPC01
		2.50					2.999	1.497	CT	1.539	0.45	28.20	1978	RA002
		1.37					2.013	0.998	CT	1.067	0.34	25.10	1978	MPC01
		2.25					3.018	1.493	CT	1.539	0.48	29.30	1978	MPC01
		2.50					1.998	0.999	CT	1.021	0.36	25.50	1979	RA001
		2.00					4.000	2.000	CT	----	0.54	30.90	1978	UD005
		1.12					2.982	1.193	CT	1.461	0.34	29.00	1978	MPC01
		2.00					2.000	0.752	CT	1.014	0.26	21.40	1972	84306
		2.00					2.000	0.748	CT	1.018	0.34	24.60	1972	84306
		2.00					4.000	2.000	CT	----	0.51	30.10	1978	UD005
		1.75					3.003	1.503	CT	1.563	0.52	30.40	1978	RA002
		2.00					2.000	0.753	CT	1.259	0.39	24.70	1972	84306
		2.50					1.994	0.999	CT	1.057	0.38	26.10	1978	MPC01
		2.00					4.000	2.000	CT	----	0.52	30.40	1978	UD005
		1.50					2.998	1.499	CT	1.541	0.50	29.79	1978	RA001
		2.00					2.983	1.499	CT	1.581	0.57	32.20	1978	MPC01
		2.75					3.002	1.503	CT	1.561	0.50	30.00	1978	RA002
		1.12					3.017	1.185	CT	1.599	0.48	29.80	1978	MPC01
		2.50					3.024	1.201	CT	1.542	0.42	27.80	1978	MPC01
		0.87					1.504	0.750	CT	0.752	0.46	28.90	1978	MPC01
		1.55					3.000	1.497	CT	1.487	0.42	27.50	1980	RA001
		1.62					3.001	1.501	CT	1.575	0.45	28.60	1978	RA002
		3.00					3.015	1.495	CT	1.628	0.62	33.50	1978	MPC01
		2.25					3.015	1.499	CT	1.598	0.48	29.80	1978	MPC01
		1.75					3.000	1.500	CT	1.580	0.45	28.30	1972	84368
3.00					2.993	1.435	CT	1.616	0.67	35.10	1978	MPC01		
1.55					2.978	1.496	CT	1.489	0.44	28.70	1978	MPC01		
1.50					3.030	1.441	CT	1.515	0.40	27.30	1978	MPC01		
1.50					3.012	1.481	CT	1.506	0.40	27.20	1978	MPC01		
1.75					3.000	1.500	CT	1.570	0.45	28.60	1972	84368		
1.73					2.999	1.499	CT	1.536	0.48	29.60	1978	RA002		
1.75					3.011	1.499	CT	1.626	0.42	27.80	1978	MPC01		
1.57					3.000	1.500	CT	1.560	0.37	26.00	1972	84368		
1.75					3.003	1.496	CT	1.587	0.48	29.50	1980	RA001		
2.03					2.982	1.501	CT	1.521	0.55	31.70	1978	MPC01		
2.03					2.998	1.501	CT	1.529	0.60	33.50	1978	MPC01		
1.57					3.000	1.500	CT	1.560	0.39	26.50	1972	84368		

TABLE 7.8.2.1 (Con't)

CONDITION	ALUMINUM				K(1C)			K(1C) STAN DEV	DATE	REFER			
	---PRODUCT--- FORM	THICK (IN)	TEST TEMP (F)	SPECIMEN ORIENT	YIELD STRENGTH (KSI)	CRACK							
						LENGTH (IN)	A						
					W	B							
T851	P	1.50	R.T.	L-T	67.2	2.509	1.252	CT	1.282	0.45	28.79	1981	MA002
		1.50			67.2	2.512	1.253	CT	1.298	0.46	29.00	1981	MA002
		1.50			67.6	2.997	1.494	CT	1.525	0.45	28.79	1978	RA001
		1.55			67.7	3.000	1.501	CT	1.575	0.38	26.50	1979	RA001
		2.00			67.7	3.029	1.498	CT	1.545	0.44	28.60	1978	MP001
		1.55			67.8	1.998	0.999	CT	1.019	0.40	27.70	1978	MP001
		1.50			67.9	1.985	0.999	CT	1.032	0.42	28.00	1978	MP001
		1.75			68.0	2.998	1.498	CT	1.589	0.55	32.40	1978	MP001
		1.37			68.2	2.984	1.376	CT	1.462	0.38	26.90	1978	MP001
		1.25			68.4	2.017	0.999	CT	1.089	0.38	26.90	1978	MP001
		1.73			68.4	3.003	1.503	CT	1.611	0.48	30.20	1978	RA002
		1.62			68.8	3.001	1.451	CT	1.522	0.40	27.79	1980	RA001
		1.50			69.1	3.002	1.492	CT	1.528	0.36	26.70	1980	RA001
		1.75			69.5	2.998	1.500	CT	1.559	0.44	29.20	1978	MP001
		2.52			69.7	2.000	1.000	CT	0.960	0.34	25.50	1972	84368
		2.52			69.7	2.000	1.000	CT	0.960	0.35	26.00	1972	84368
		2.52			69.7	2.000	1.000	CT	0.940	0.33	25.20	1972	84368
	T851	P	3.50	81	L-T	64.4	3.000	1.500	CT	1.547	0.45	27.40	1973
		3.50			64.4	3.000	1.499	CT	1.533	0.53	29.60	1973	86213
T851	P	2.50	250	L-T	56.9	2.000	1.000	CT	----	0.85	33.30	1974	88742
		2.50			56.9	2.000	1.000	CT	----	0.88	33.90	1974	88742
		2.50			56.9	2.000	1.000	CT	----	0.78	31.90	1974	88742
T851	P	3.00	R.T.	T-L	----	3.014	1.372	CT	1.477	----	26.40	1978	MP001
		5.00			53.0	3.004	1.502	CT	1.533	0.56	25.10	1979	GD011
		6.00			53.9	3.020	1.499	CT	1.510	0.44	23.10	1978	MP001
		5.50			54.2	2.973	1.497	CT	1.516	0.50	24.80	1978	MP001
		5.25			54.4	2.998	1.498	CT	1.559	0.50	24.80	1978	MP001
		6.00			54.6	2.979	1.499	CT	1.579	0.57	26.60	1978	MP001
		5.25			54.9	3.012	1.499	CT	1.536	0.42	22.90	1978	MP001
		6.00			54.9	3.008	1.499	CT	1.594	0.55	26.00	1978	MP001
		6.00			54.9	2.985	1.499	CT	1.552	0.67	28.80	1978	MP001
		6.00			55.0	3.000	1.500	CT	1.580	0.48	24.10	1972	84368
		6.00			55.0	3.000	1.500	CT	1.560	0.46	23.70	1972	84368
		5.50			55.6	3.017	1.498	CT	1.569	0.70	29.90	1978	MP001
		5.50			55.9	2.999	1.500	CT	1.582	0.50	25.00	1980	RA001
		5.75			56.4	2.001	0.995	CT	1.010	0.60	27.70	1980	RA001

TABLE 7.8.2.1 (Con't)

CONDITION	ALUMINUM		YIELD STRENGTH (KSI)	SPECIMEN		W (IN)	CRACK LENGTH (IN)		K(1C)	2.5* (K(1C)/TYS)**2 (IN)	K(1C) MEAN DEV (KSI*SQRT IN)	STAN DEV	DATE	REFER		
	--PRODUCT-- FORM	THICK (IN)		TEST TEMP (F)	ORIENT		THICK (IN)	DESIGN							A	B
1851	P	5 50	R. T.	T-L		3.008	1.499	CT	1.564	0.55	27.00		1978	MPC01		
		6 00				3.004	1.499	CT	1.622	0.50	26.00		1978	MPC01		
		5 50				3.028	1.500	CT	1.544	0.48	25.10		1978	MPC01		
		5 50				3.010	1.498	CT	1.505	0.57	27.60		1978	MPC01		
		6 00				2.001	0.998	CT	1.000	0.56	27.20		1980	RA001		
		6 00				3.014	1.498	CT	1.537	0.38	22.30		1978	MPC01		
		5 00				3.010	1.498	CT	1.505	0.44	24.10		1978	MPC01		
		5 00				3.026	1.500	CT	1.604	0.42	23.90		1978	MPC01		
		4 90				3.000	1.498	CT	1.556	0.73	30.90		1978	RA002		
		6 00				3.026	1.474	CT	1.513	0.57	27.90		1978	MPC01		
		5 12				3.028	1.499	CT	1.544	0.55	27.20		1978	MPC01		
		5 00				2.996	1.497	CT	1.528	0.60	28.30		1978	MPC01		
		5 12				2.987	1.500	CT	1.583	0.70	30.90		1978	MPC01		
		4 62				2.981	1.500	CT	1.550	0.60	28.50		1978	MPC01		
		5 50				3.008	1.502	CT	1.564	0.36	22.40		1978	MPC01		
		5 50				2.994	1.500	CT	1.557	0.44	24.40		1978	MPC01		
		5 00				2.998	1.501	CT	1.585	0.51	26.29		1979	RA001		
		5 00				2.006	0.998	CT	1.043	0.46	25.30		1978	MPC01		
		6 00				1.998	0.997	CT	1.025	0.47	25.29		1978	MPC01		
		4 62				3.020	1.499	CT	1.510	0.42	24.20		1978	MPC01		
		4 50				2.997	1.497	CT	1.548	0.47	25.40		1979	RA001		
		5 50				2.986	1.500	CT	1.463	0.48	26.00		1978	MPC01		
		5 50				3.006	1.501	CT	1.533	0.38	22.80		1978	MPC01		
		5 50				2.984	1.498	CT	1.492	0.52	27.00		1978	MPC01		
		5 00				3.001	1.498	CT	1.612	0.44	24.60		1978	RA001		
		4 25				3.000	1.499	CT	1.599	0.48	25.60		1980	RA001		
		5 00				2.996	1.499	CT	1.533	0.40	23.40		1979	RA001		
		5 00				3.020	1.498	CT	1.540	0.40	23.50		1978	MPC01		
	4 50				3.000	1.500	CT	1.570	0.51	26.90		1972	84368			
	4 00				2.999	1.498	CT	1.560	0.43	24.29		1980	RA001			
	5 50				2.996	1.501	CT	1.528	0.44	25.10		1978	MPC01			
	5 00				2.972	1.499	CT	1.603	0.44	24.80		1978	MPC01			
	5 25				3.018	1.499	CT	1.509	0.52	27.20		1978	MPC01			
	4 00				1.998	0.998	CT	1.005	0.36	22.90		1979	RA001			
	5 50				2.982	1.500	CT	1.521	0.44	25.20		1978	MPC01			
	5 50				3.031	1.500	CT	1.546	0.36	22.70		1978	MPC01			
	5 50				3.008	1.500	CT	1.534	0.30	21.00		1978	MPC01			
	4 90				3.000	1.499	CT	1.623	0.40	23.79		1978	RA002			
	4 00				3.006	1.492	CT	1.533	0.48	26.40		1978	MPC01			



TABLE 7.8.2.1 (Con't)

CONDITION	ALUMINUM				2124				K(IIC)				DATE	REFER
	--PRODUCT--		TEST SPECIMEN ORIENT	YIELD STRENGTH (KSI)	-----SPECIMEN-----		CRACK LENGTH (IN)	2 5* (K(IIC)/T/8) (IN)	K(IIC) MEAN DEV (KSI*SQRT IN)	K(IIC) STAN DEV				
	FORM	THICK (IN)			THICK (IN)	WIDTH (IN)					THICK (IN)	DESIGN		
T851	P	4 55	R T	T-L	58.9	3 001	1 500	CT	1 563	0 57	28 20	1980	RA001	
		4 00			58.9	2 998	1 496	CT	1 589	0 38	23 00	1978	MPC01	
		6 00			59 0	2 987	1 500	CT	1 553	0 62	29 50	1978	MPC01	
		4 00			59 0	3 012	1 501	CT	1 566	0 42	24 50	1978	MPC01	
		5 50			59 0	2 977	1 501	CT	1 548	0 48	26 50	1978	MPC01	
		5 50			59 1	3 006	1 500	CT	1 533	0 40	23 70	1978	MPC01	
		4 90			59 1	3 006	1 493	CT	1 503	0 44	25 30	1978	MPC01	
		4 50			59 1	2 994	1 498	CT	1 587	0 55	28 20	1978	MPC01	
		4 90			59 1	3 000	1 499	CT	1 613	0 47	25 79	1978	RA002	
		4 00			59 1	3 003	1 498	CT	1 604	0 56	28 10	1980	RA001	
		5 50			59 2	3 028	1 500	CT	1 544	0 36	22 80	1978	MPC01	
		4 50			59 2	2 987	1 498	CT	1 553	0 38	23 20	1978	MPC01	
		4 50			59 2	3 017	1 498	CT	1 599	0 55	28 20	1978	MPC01	
		4 00			59 2	3 004	1 499	CT	1 562	0 34	22 40	1978	MPC01	
		5 50			59 2	2 983	1 497	CT	1 551	0 30	21 00	1978	MPC01	
		5 50			59 3	3 000	1 500	CT	1 510	0 34	21 80	1972	84368	
		6 00			59 3	2 976	1 500	CT	1 577	0 60	29 60	1978	MPC01	
		5 50			59 3	3 000	1 500	CT	1 540	0 35	22 30	1972	84368	
		4 50			59 4	3 001	1 501	CT	1 583	0 36	22 79	1978	RA002	
		5 50			59 6	3 016	1 500	CT	1 538	0 32	21 50	1978	MPC01	
		5 50			59 6	3 016	1 499	CT	1 538	0 30	20 90	1978	MPC01	
		5 50			59 6	3 008	1 502	CT	1 534	0 32	21 90	1978	MPC01	
		5 00			59 7	2 000	1 001	CT	1 045	0 37	23 20	1978	RA002	
		5 00			59 8	3 026	1 500	CT	1 543	0 38	23 50	1978	MPC01	
		5 50			59 8	3 018	1 500	CT	1 539	0 40	24 20	1978	MPC01	
		5 50			59 8	2 996	1 500	CT	1 558	0 40	24 10	1978	MPC01	
		4 00			59 9	2 999	1 499	CT	1 570	0 38	23 40	1980	RA001	
		6 00			59 9	3 012	1 499	CT	1 566	0 65	30 60	1978	MPC01	
		4 90			59 9	3 003	1 500	CT	1 572	0 42	24 60	1978	RA002	
		4 50			60 0	3 000	1 500	CT	1 500	0 57	28 80	1978	MPC01	
		4 00			60 0	2 000	1 000	CT	1 030	0 38	23 40	1972	84368	
		4 50			60 0	3 000	1 496	CT	1 604	0 41	24 29	1978	RA002	
		5 50			60 1	2 994	1 501	CT	1 557	0 34	22 50	1978	MPC01	
		4 00			60 1	2 999	1 500	CT	1 493	0 54	28 10	1980	RA001	
		5 00			60 1	3 000	1 501	CT	1 530	0 38	23 80	1978	MPC01	
		5 50			60 1	3 002	1 500	CT	1 530	0 30	21 50	1978	MPC01	
		5 50			60 1	2 994	1 501	CT	1 527	0 32	22 10	1978	MPC01	
		5 25			60 1	3 026	1 500	CT	1 513	0 44	25 30	1978	MPC01	
		5 50			60 1	2 992	1 500	CT	1 526	0 40	24 30	1978	MPC01	

TABLE 7.8.2.1 (Con't)

CONDITION	ALUMINUM				YIELD (KSI)	SPECIMEN			CRACK LENGTH (IN)	2.5* (IN)	K(1C) (KSI*SQRT IN)	K(1C) MEAN (KSI*SQRT IN)	STAN DEV	DATE	REFER
	PRODUCT--		TEST TEMP (F)	SPECIMEN ORIENT		THICK									
	FORM	THICK (IN)				WIDTH (IN)	DESIGN								
TBS1	P	4 00	R	T	T-L	3 000	1.497	CT	1.636	0.41	34.40	1978	RA001		
		5 50				2.988	1.500	CT	1.524	0.36	22.90	1978	MPC01		
		4 00				3.020	1.498	CT	1.540	0.50	27.20	1978	MPC01		
		4 25				1.981	0.997	CT	1.030	0.46	26.40	1978	MPC01		
		4 00				2.998	1.373	CT	1.588	0.51	27.40	1978	RA001		
		5 50				3.000	1.500	CT	1.500	0.36	23.30	1978	MPC01		
		5 00				3.214	1.499	CT	1.539	0.36	23.40	1978	MPC01		
		5 50				2.978	1.500	CT	1.519	0.38	23.60	1978	MPC01		
		3 50				3.016	1.497	CT	1.478	0.46	26.50	1978	MPC01		
		5 50				2.998	1.500	CT	1.529	0.28	21.20	1978	MPC01		
		5 25				3.018	1.500	CT	1.539	0.50	27.70	1978	MPC01		
		1 81				3.002	1.498	CT	1.651	0.44	25.70	1978	MPC01		
		3 75				2.996	1.497	CT	1.528	0.48	27.00	1978	MPC01		
		5 50				3.014	1.500	CT	1.537	0.36	23.50	1978	MPC01		
		5 50				2.996	1.500	CT	1.528	0.34	23.00	1978	MPC01		
		5 50				3.018	1.500	CT	1.539	0.32	22.20	1978	MPC01		
		4 50				3.020	1.501	CT	1.510	0.46	26.70	1978	MPC01		
		4 31				2.000	1.000	CT	1.000	0.38	23.60	1972	84368		
		4 31				2.000	1.000	CT	0.990	0.39	23.90	1972	84368		
		5 00				2.988	1.500	CT	1.524	0.30	21.90	1978	MPC01		
		3 00				3.002	1.498	CT	1.567	0.57	29.29	1980	RA001		
		4 00				2.998	1.499	CT	1.608	0.43	25.29	1979	RA001		
		5 00				3.020	1.501	CT	1.631	0.46	26.60	1978	MPC01		
		3 00				3.001	1.418	CT	1.555	0.54	28.50	1980	RA001		
		5 50				3.004	1.490	CT	1.532	0.32	22.00	1978	MPC01		
		4 00				3.000	1.498	CT	1.562	0.59	29.70	1978	RA001		
		5 25				2.985	1.500	CT	1.532	0.42	25.50	1978	MPC01		
		3 00				2.999	1.498	CT	1.546	0.46	26.29	1980	RA001		
		5 50				3.011	1.501	CT	1.524	0.32	22.50	1978	MPC01		
		6 00				3.008	1.499	CT	1.594	0.67	31.80	1978	MPC01		
		4 25				3.020	1.500	CT	1.540	0.34	22.70	1978	MPC01		
		1 75				2.999	1.499	CT	1.563	0.40	24.70	1980	RA001		
		4 90				3.000	1.499	CT	1.625	0.44	25.79	1978	RA002		
		4 50				3.000	1.500	CT	1.570	0.36	23.30	1972	84368		
		4 50				3.000	1.500	CT	1.520	0.34	22.50	1972	84368		
		5 50				3.010	1.500	CT	1.535	0.32	22.30	1978	MPC01		
		4 50				3.030	1.500	CT	1.515	0.52	28.60	1978	MPC01		
		4 50				3.020	1.500	CT	1.510	0.50	27.70	1978	MPC01		
		3 00				3.001	1.438	CT	1.613	0.42	25.40	1978	RA001		

TABLE 7.8.2.1 (Con't)

CONDITION	ALUMINUM		2124		K(1C)		CRACK		2.5*		K(1C)		K(1C)		STAN	REFER
	--PRODUCT-- FORM	THICK (IN)	YIELD STRENGTH (KSI)	SPECIMEN THICK (IN)	DESIGN (IN)	W	B	LENGTH (IN)	A	(K(1C)/TYS)**2 (IN)	(KSI*SQRT IN)	MEAN (IN)	DEV	DATE		
1851	P	5 00	61 4	3 028	1 500	CT		1 544		0 32	22 30			1978	MPC01	
		5 50	61 4	3 006	1 500	CT		1 533		0 28	21 30			1978	MPC01	
		4 50	61 4	3 014	1 500	CT		1 507		0 50	27 90			1978	MPC01	
		4 00	61 4	3 000	1 497	CT		1 657		0 50	27 70			1979	RA001	
		3 50	61 5	3 000	1 497	CT		1 602		0 55	29 00			1978	RA001	
		4 31	61 5	3 022	1 502	CT		1 632		0 42	25 90			1978	MPC01	
		5 00	61 5	3 000	1 499	CT		1 547		0 37	23 70			1980	RA001	
		2 25	61 6	2 994	1 502	CT		1 587		0 52	28 80			1978	MPC01	
		3 50	61 6	3 006	1 499	CT		1 533		0 50	28 30			1978	MPC01	
		4 90	61 6	3 030	1 494	CT		1 515		0 38	24 30			1978	MPC01	
		5 50	61 6	3 029	1 500	CT		1 549		0 32	22 60			1978	MPC01	
		3 50	61 6	2 990	1 497	CT		1 555		0 52	28 40			1978	MPC01	
		4 25	61 6	2 990	1 500	CT		1 525		0 32	22 30			1978	MPC01	
		4 00	61 7	2 994	1 499	CT		1 587		0 38	24 40			1978	MPC01	
		3 00	61 7	78	0 997	CT		1 031		0 37	24 00			1979	RA001	
		5 00	61 7	1 004	1 500	CT		1 562		0 34	23 00			1978	MPC01	
		3 00	61 7	2 003	1 404	CT		1 556		0 51	28 10			1980	RA001	
		2 70	61 7	2 017	0 999	CT		1 049		0 55	29 30			1978	MPC01	
		3 00	61 8	3 002	1 374	CT		1 505		0 37	23 79			1980	RA001	
		2 50	61 8	2 994	1 056	CT		1 557		0 38	24 90			1978	MPC01	
		2 50	61 8	3 000	1 499	CT		1 647		0 42	25 60			1978	RA001	
		4 25	61 9	3 026	1 502	CT		1 543		0 32	22 90			1978	MPC01	
		5 50	61 9	3 000	1 500	CT		2 100		0 44	26 00			1978	GD003	
		3 12	61 9	3 022	1 499	CT		1 511		0 50	27 90			1978	MPC01	
		5 50	61 9	3 000	1 500	CT		2 100		0 43	25 70			1978	GD003	
		5 50	61 9	3 000	1 500	CT		2 100		0 43	25 70			1978	GD003	
		2 50	61 9	3 000	1 499	CT		1 561		0 43	25 79			1978	RA002	
		4 25	61 9	3 002	1 500	CT		1 531		0 28	21 60			1978	MPC01	
		3 62	62 0	2 995	1 498	CT		1 544		0 34	22 90			1980	RA001	
		2 00	62 0	2 994	1 499	CT		1 597		0 53	28 70			1980	RA001	
		4 25	62 1	2 978	1 500	CT		1 519		0 36	24 00			1978	MPC01	
		4 50	62 1	3 006	1 500	CT		1 533		0 50	28 20			1978	MPC01	
		4 50	62 1	3 006	1 500	CT		1 503		0 55	29 40			1978	MPC01	
		4 50	62 1	2 994	1 501	CT		1 527		0 50	28 30			1978	MPC01	
		4 50	62 1	3 002	1 498	CT		1 600		0 48	27 40			1980	RA001	
		2 50	62 1	2 000	1 000	CT		---		0 47	26 70			1974	BB742	
		2 00	62 1	2 002	1 002	CT		1 052		0 32	22 29			1978	RA002	
		4 90	62 1	3 000	1 500	CT		1 617		0 40	25 10			1978	RA002	
	2 50	62 1	2 000	1 000	CT		---		0 47	26 90			1974	BB742		

TABLE 7.8.2.1 (Con't)

CONDITION	--PRODUCT--			YIELD STRENGTH (KSI)	ALUMINUM			2124			K(IIC)			2.5* CRACK LENGTH (IN)	K(IIC)/TYS)**2 (IN)	K(IIC) MEAN (KSI*SQRT IN)	STAN DEV	DATE	REFER
	FORM	THICK (IN)	TEMP (F)		TEST SPECIMEN ORIENT	WIDTH (IN)	-----SPECIMEN-----		DESIGN	LENGTH (IN)	A	B							
							THICK (IN)	THICK (IN)											
1851	P	4.50	R	T	T-L	3.016	1.500	CT	1.508	0.50	28.10	1978	MPC01						
	2.50				2.000	1.000	CT	----		0.52	28.20	1974	88742						
	2.50				3.021	0.869	CT	1.420	0.40	25.40	1978	MPC01							
	1.73				1.992	1.000	CT	1.016	0.36	24.10	1978	MPC01							
	3.50				3.001	1.500	CT	1.581	0.43	26.60	1979	RA001							
	2.50				2.989	1.498	CT	1.584	0.36	24.10	1978	MPC01							
	3.00				3.002	1.375	CT	1.551	0.61	31.00	1980	RA001							
	2.50				2.000	0.997	CT	1.040	0.30	21.90	1978	MPC01							
	4.00				3.002	1.251	CT	1.644	0.33	22.70	1980	RA001							
	5.50				2.988	1.499	CT	1.524	0.48	27.70	1978	MPC01							
	2.50				2.964	1.500	CT	1.926	0.42	25.70	1980	RA001							
	3.12				3.003	1.498	CT	1.565	0.50	28.10	1980	RA001							
	1.50				3.000	1.484	CT	1.556	0.42	25.60	1980	RA001							
	4.25				3.020	1.500	CT	1.540	0.34	23.10	1978	MPC01							
	62.4				3.008	1.482	CT	1.504	0.42	26.10	1978	MPC01							
	3.00				2.999	1.363	CT	1.568	0.35	23.60	1980	RA001							
	3.00				62.5	3.001	1.187	CT	1.641	0.39	25.00	1978	RA002						
	4.25				62.5	2.986	1.500	CT	1.523	0.34	23.30	1978	MPC01						
	2.75				62.5	3.000	1.496	CT	1.648	0.35	23.40	1978	RA002						
	4.50				62.6	3.012	1.501	CT	1.506	0.44	26.80	1978	MPC01						
	2.50				62.6	3.000	1.499	CT	1.592	0.41	25.60	1978	RA002						
	3.00				62.6	2.999	1.301	CT	1.515	0.43	26.20	1978	RA002						
	3.50				62.6	3.000	1.498	CT	1.559	0.35	23.60	1980	RA001						
	4.00				62.7	3.019	1.500	CT	1.630	0.42	26.10	1978	MPC01						
3.50				62.7	3.000	1.500	CT	1.550	0.46	26.80	1972	84368							
4.00				62.7	3.002	1.498	CT	1.591	0.46	27.20	1978	MPC01							
3.50				62.7	3.000	1.500	CT	1.550	0.44	26.40	1972	84368							
3.12				62.7	3.000	1.498	CT	1.594	0.54	29.40	1978	RA001							
3.00				62.8	3.014	1.301	CT	1.567	0.46	27.20	1978	MPC01							
3.00				62.8	3.000	1.498	CT	1.505	0.32	22.60	1980	RA001							
4.25				62.8	2.977	1.500	CT	1.518	0.34	23.40	1978	MPC01							
3.00				62.9	2.999	1.399	CT	1.523	0.55	29.70	1980	RA001							
2.00				62.9	3.026	1.503	CT	1.513	0.38	25.00	1978	MPC01							
5.00				62.9	2.981	1.500	CT	1.550	0.38	24.70	1978	MPC01							
3.12				62.9	2.980	1.448	CT	1.609	0.48	28.20	1978	MPC01							
4.25				62.9	2.990	1.500	CT	1.525	0.28	21.80	1978	MPC01							
4.25				62.9	3.014	1.500	CT	1.537	0.36	24.00	1978	MPC01							
2.00				62.9	3.016	1.497	CT	1.508	0.40	25.30	1978	MPC01							
3.62				62.9	3.031	1.497	CT	1.485	0.40	25.20	1978	MPC01							

TABLE 7.8.2.1 (Con't)

CONDITION	ALUMINUM		2124		K(1C)		DATE	REFER					
	FORM	THICK (IN)	TEST SPECIMEN ORIENT (F)	YIELD STRENGTH (KSI)	SPECIMEN-----				CRACK LENGTH (IN)	2.5* K(1C)/(TYS)**2 (IN)	K(1C) MEAN (IN)	STAN DEV (IN)	
					WIDTH (IN)	THICK (IN)							DESIGN
T851	P	2.50	R. T.	T-L	63.0	2.489	1.250	CT	1.294	0.40	25.70	1978	MPC01
		2.50			63.0	2.528	1.250	CT	1.289	0.40	25.50	1978	MPC01
		3.54			63.0	3.019	1.498	CT	1.630	0.46	27.40	1978	MPC01
		2.50			63.1	2.998	1.099	CT	1.589	0.36	24.20	1978	MPC01
		4.25			63.2	2.975	1.500	CT	1.547	0.32	22.90	1978	MPC01
		1.75			63.2	2.980	1.498	CT	1.490	0.28	22.00	1978	MPC01
		3.00			63.2	2.000	0.975	CT	1.036	0.41	25.90	1978	RA002
		3.25			63.4	3.027	1.499	CT	1.574	0.42	26.30	1978	MPC01
		2.25			63.4	2.985	1.503	CT	1.582	0.44	27.20	1978	MPC01
		4.25			63.4	2.983	1.499	CT	1.551	0.30	22.80	1978	MPC01
		5.50			63.4	2.988	1.500	CT	1.524	0.32	22.90	1978	MPC01
		1.37			63.4	1.996	0.978	CT	1.078	0.30	22.20	1978	MPC01
		2.50			63.5	3.001	1.496	CT	1.572	0.39	25.40	1980	RA001
		2.00			63.5	2.990	1.499	CT	1.555	0.32	23.40	1978	MPC01
		2.35			63.5	3.000	1.499	CT	1.541	0.35	24.00	1980	RA001
		3.12			63.6	3.027	1.499	CT	1.574	0.42	26.30	1978	MPC01
		2.50			63.6	3.001	1.499	CT	1.600	0.39	25.40	1978	RA002
		3.00			63.7	3.001	1.333	CT	1.574	0.33	23.40	1979	RA001
		2.90			63.7	2.992	0.996	CT	1.466	0.42	26.30	1978	MPC01
		3.54			63.7	3.000	1.497	CT	1.530	0.42	26.90	1978	MPC01
		3.00			63.7	3.004	1.400	CT	1.592	0.32	23.30	1978	MPC01
		2.75			63.8	2.999	1.498	CT	1.572	0.36	24.29	1980	RA001
		2.50			63.8	3.028	1.498	CT	1.544	0.36	24.30	1978	MPC01
		3.12			63.9	3.020	1.502	CT	1.480	0.46	27.60	1978	MPC01
		2.00			63.9	2.990	0.870	CT	1.465	0.34	24.20	1978	MPC01
		2.00			63.9	2.975	1.502	CT	1.517	0.44	27.20	1978	MPC01
		1.75			64.0	3.001	1.498	CT	1.554	0.33	23.29	1978	RA001
		2.50			64.0	2.989	1.499	CT	1.614	0.44	27.10	1978	MPC01
		5.00			64.1	3.028	1.498	CT	1.514	0.38	25.10	1978	MPC01
		3.00			64.1	1.998	0.998	CT	1.029	0.41	26.00	1979	RA001
		3.00			64.1	3.001	1.428	CT	1.591	0.43	26.60	1978	RA001
		1.25			64.1	2.016	0.999	CT	1.028	0.34	23.80	1978	MPC01
		2.50			64.1	2.999	1.498	CT	1.545	0.41	26.20	1980	RA001
		2.75			64.2	3.000	1.496	CT	1.570	0.47	27.90	1980	RA001
		3.50			64.2	3.000	1.500	CT	1.520	0.33	23.30	1972	84368
		2.75			64.2	2.987	1.497	CT	1.553	0.44	27.30	1978	MPC01
		3.00			64.2	3.017	1.496	CT	1.539	0.44	27.50	1978	MPC01
		4.00			64.2	3.975	1.999	CT	2.067	0.42	26.60	1978	MPC01
		3.50			64.2	3.000	1.500	CT	1.520	0.32	22.80	1972	84368

TABLE 7.8.2.1 (Con't)

CONDITION	--PRODUCT--		TEST SPECIMEN ORIENT	YIELD STRENGTH (KSI)	ALUMINUM		SPECIMEN		CRACK		K(1C) MEAN DEV (KSI*SQRT IN)	K(1C) STAN DEV	DATE	REFER
	FORM	THICK (IN)			THICK (IN)	WIDTH (IN)	THICK (IN)	DESIGN	LENGTH (IN)	2.5* (IN)				
T851	P	4.00	R. T.	64.2	3.000	1.500	CT	1.590	0.26	20.80	1972 84368			
		0.62		64.2	1.004	0.500	CT	0.512	0.46	28.00	1978 MPC01			
		3.00		64.2	2.996	1.400	CT	1.648	0.34	24.20	1978 MPC01			
		2.50		64.2	2.000	1.000	CT	1.040	0.42	26.30	1972 84368			
		4.00		64.2	3.000	1.500	CT	1.590	0.27	21.00	1972 84368			
		1.75		64.2	2.998	1.501	CT	1.588	0.44	27.20	1980 RAO01			
		4.00		64.2	4.004	2.000	CT	2.042	0.42	26.40	1978 MPC01			
		1.75		64.2	2.996	0.751	CT	1.498	0.30	22.90	1978 MPC01			
		2.50		64.2	3.001	1.497	CT	1.564	0.30	22.60	1980 RAO01			
		2.75		64.2	3.002	1.373	CT	1.539	0.39	23.60	1980 RAO01			
		2.00		64.2	3.003	1.495	CT	1.533	0.30	22.50	1980 RAO01			
		2.50		64.2	2.000	1.000	CT	1.050	0.41	26.10	1972 84368			
		2.50		64.4	4.000	2.000	CT	2.170	0.54	29.90	1972 84368			
		3.62		64.4	2.987	1.501	CT	1.643	0.30	22.80	1978 MPC01			
		2.50		64.4	4.000	2.000	CT	2.180	0.54	30.00	1972 84368			
		2.00		64.4	2.993	1.499	CT	1.616	0.36	25.00	1978 MPC01			
		3.25		64.4	3.030	1.498	CT	1.515	0.38	25.60	1978 MPC01			
		2.00		64.4	3.000	1.498	CT	1.551	0.41	26.10	1980 RAO01			
		3.00		64.4	3.007	1.400	CT	1.624	0.36	25.00	1978 MPC01			
		1.50		64.5	3.002	1.499	CT	1.512	0.36	24.79	1980 RAO01			
		1.75		64.5	3.004	1.500	CT	1.500	0.36	24.60	1978 RAO02			
		2.50		64.6	3.031	1.499	CT	1.576	0.32	23.40	1978 MPC01			
		2.20		64.6	3.003	1.498	CT	1.553	0.35	24.20	1980 RAO01			
		2.50		64.6	2.998	1.500	CT	1.558	0.37	25.10	1980 RAO01			
		2.00		64.7	1.990	0.753	CT	1.029	0.32	23.20	1972 84306			
		2.00		64.7	1.990	0.751	CT	1.004	0.29	21.90	1972 84306			
		2.00		64.7	2.000	0.751	CT	1.038	0.33	23.40	1972 84306			
		2.50		64.8	2.489	1.250	CT	1.294	0.44	27.30	1978 MPC01			
		2.50		64.8	4.000	2.000	CT	2.130	0.46	27.70	1972 84368			
		2.50		64.8	2.522	1.250	CT	1.286	0.42	27.10	1978 MPC01			
		2.50		64.8	4.000	2.000	CT	2.150	0.47	28.10	1972 84368			
		2.00		64.8	3.011	1.499	CT	1.596	0.42	27.00	1978 MPC01			
		2.50		64.9	2.012	0.999	CT	0.986	0.25	21.10	1978 MPC01			
		2.35		64.9	3.001	1.500	CT	1.546	0.36	24.79	1978 RAO02			
		3.54		64.9	3.016	1.504	CT	1.508	0.48	28.70	1978 MPC01			
		2.25		64.9	1.996	0.998	CT	1.508	0.30	23.00	1978 MPC01			
		2.35		65.0	2.018	0.996	CT	1.009	0.32	23.80	1978 MPC01			
		2.50		65.1	2.037	0.998	CT	0.986	0.30	23.00	1978 MPC01			
		3.00		65.1	2.988	1.247	CT	1.464	0.32	23.60	1978 MPC01			

TABLE 7.8.2.1 (Con't)

CONDITION	ALUMINUM										K(IIC)		DATE	REFER
	--PRODUCT--		TEST SPECIMEN ORIENT	YIELD STRENGTH (KSI)	-----SPECIMEN-----			CRACK LENGTH (IN)	2.5* K(IIC)/(TVB)**2 (IN)	K(IIC) MEAN DEV (KBI*SQRT IN)				
	FORM	THICK (IN)			THICK (IN)	DESIGN	A							
											W	B		
T851	P	1.12	R.T.	T-L	65.2	2.972	1.153	CT	1.486	0.28	22.20	1978	MPC01	
		2.04			65.2	1.500	0.750	CT	0.740	0.22	19.50	1972	84368	
		2.04			65.2	1.500	0.750	CT	0.730	0.22	19.40	1972	84368	
		3.00			65.2	2.998	1.400	CT	1.619	0.38	26.00	1978	MPC01	
		1.50			65.2	3.000	1.493	CT	1.500	0.38	26.00	1978	MPC01	
		2.00			65.2	3.018	1.500	CT	1.509	0.38	25.80	1978	MPC01	
		1.57			65.2	3.000	1.500	CT	1.520	0.51	29.40	1972	84368	
		1.57			65.2	3.000	1.500	CT	1.540	0.54	30.30	1972	84368	
		3.12			65.2	3.023	1.497	CT	1.602	0.44	27.70	1978	MPC01	
		1.12			65.3	3.029	1.136	CT	1.484	0.27	22.10	1978	MPC01	
		2.50			65.3	2.018	0.999	CT	1.009	0.55	30.80	1978	MPC01	
		1.50			65.4	2.996	1.478	CT	1.528	0.42	27.10	1978	MPC01	
		2.00			65.4	3.000	1.500	CT	1.540	0.34	24.10	1972	84368	
		1.75			65.4	3.028	1.499	CT	1.514	0.38	25.80	1978	MPC01	
		2.00			65.4	3.000	1.500	CT	1.540	0.35	24.40	1972	84368	
		1.50			65.4	3.020	1.441	CT	1.540	0.42	27.20	1978	MPC01	
		1.75			65.4	3.003	1.502	CT	1.568	0.40	26.20	1978	RA002	
		1.50			65.4	2.999	1.478	CT	1.531	0.37	25.40	1980	RA001	
		2.40			65.4	3.001	1.497	CT	1.554	0.32	23.70	1980	RA001	
		2.50			65.4	3.000	1.500	CT	1.551	0.38	25.79	1980	RA001	
		1.62			65.4	3.001	1.500	CT	1.558	0.38	25.90	1978	RA002	
		2.00			65.5	1.994	0.899	CT	1.057	0.32	24.00	1975	MPC01	
		2.00			65.6	3.001	1.500	CT	1.561	0.33	23.90	1978	RA002	
		1.81			65.6	2.015	0.999	CT	1.048	0.32	24.10	1978	MPC01	
		1.75			65.7	3.000	1.500	CT	1.560	0.33	24.00	1972	84368	
		3.12			65.7	2.981	1.400	CT	1.580	0.34	24.90	1978	MPC01	
		1.75			65.7	3.000	1.500	CT	1.580	0.33	23.90	1972	84368	
		2.03			65.7	3.014	1.501	CT	1.537	0.46	28.70	1978	MPC01	
		2.50			65.7	2.973	1.099	CT	1.546	0.28	22.80	1978	MPC01	
		2.00			65.7	3.000	1.497	CT	1.564	0.34	24.50	1978	RA001	
	0.87			65.8	1.502	0.750	CT	0.766	0.40	26.90	1978	MPC01		
	0.87			65.8	1.508	0.750	CT	0.769	0.34	24.60	1978	MPC01		
	2.50			65.8	2.999	1.499	CT	1.579	0.32	23.70	1978	MPC01		
	2.50			65.8	3.002	1.100	CT	1.528	0.31	23.40	1980	RA001		
	2.25			65.8	2.002	0.999	CT	1.041	0.32	24.30	1978	MPC01		
	2.25			65.8	3.008	1.493	CT	1.504	0.30	23.50	1978	MPC01		
	1.75			65.9	3.003	1.503	CT	1.552	0.36	25.20	1978	RA002		
	2.50			66.0	3.017	0.999	CT	1.448	0.30	23.30	1978	MPC01		
	3.00			66.0	2.500	0.754	CT	1.279	0.29	22.60	1972	84306		

TABLE 7.8.2.1 (Con't)

CONDITION	--PRODUCT-- FORM	TEST SPECIMEN THICK TEMP ORIENT (F)	YIELD STRENGTH (KSI)	ALUMINUM		SPECIMEN WIDTH THICK (IN) (IN)	DESIGN	K(1C)		2.5* K(1C)/TVB)**2 (IN)	K(1C) STAN		DATE	REFER
								CRACK LENGTH (IN)	A		K(1C) MEAN (KSI*SQRT IN)	DEV		
TB51	P	R. T.	T-L	3.00	2.03	3.020	1.500	CT	1.510	0.50	30.20		1978	MPC01
				3.00	3.00	2.500	0.795	CT	1.270	0.35	24.60		1972	B4306
				2.75	2.75	3.026	1.247	CT	1.543	0.34	24.70		1978	MPC01
				1.50	1.50	3.003	1.502	CT	1.584	0.43	27.70		1978	RA002
				1.50	1.50	2.985	1.440	CT	1.552	0.40	26.60		1978	MPC01
				2.50	2.50	2.988	1.441	CT	1.524	0.38	26.20		1978	MPC01
				1.50	1.50	1.997	0.999	CT	1.035	0.27	22.10		1979	RA001
				1.50	1.50	2.997	1.499	CT	1.543	0.34	24.90		1978	RA001
				2.00	2.00	3.018	1.499	CT	1.539	0.38	26.10		1978	MPC01
				1.55	1.55	1.998	0.997	CT	1.019	0.32	24.90		1978	MPC01
				1.55	1.55	3.029	1.496	CT	1.484	0.30	23.70		1978	MPC01
				2.50	2.50	2.981	1.500	CT	1.550	0.28	23.00		1978	MPC01
				1.12	1.12	3.002	1.498	CT	1.544	0.36	25.90		1980	RA001
				1.81	1.81	2.004	1.000	CT	1.022	0.36	25.40		1978	MPC01
				1.55	1.55	2.990	1.497	CT	1.495	0.34	24.70		1978	MPC01
				1.25	1.25	1.998	0.999	CT	1.014	0.28	23.30		1978	MPC01
				1.73	1.73	1.981	1.000	CT	1.050	0.25	21.90		1978	MPC01
				1.55	1.55	2.999	1.499	CT	1.517	0.32	24.10		1978	RA002
				2.50	2.50	3.000	1.497	CT	1.522	0.31	23.60		1980	RA001
				1.50	1.50	1.987	0.998	CT	1.033	0.42	27.40		1978	MPC01
				1.50	1.50	1.983	0.999	CT	1.051	0.25	22.00		1978	MPC01
				1.50	1.50	2.998	1.496	CT	1.485	0.29	23.00		1978	RA001
				1.57	1.57	3.000	1.500	CT	1.590	0.35	25.10		1972	B4368
				1.57	1.57	3.000	1.500	CT	1.560	0.32	24.00		1972	B4368
				1.57	1.57	3.000	1.500	CT	1.560	0.32	24.00		1972	B4368
				1.57	1.57	3.000	1.500	CT	1.590	0.35	25.30		1972	B4368
				1.73	1.73	3.002	1.498	CT	1.550	0.32	24.10		1978	RA002
				1.50	1.50	3.002	1.492	CT	1.524	0.29	23.20		1980	RA001
				1.55	1.55	3.001	1.497	CT	1.563	0.28	22.90		1979	RA001
				1.75	1.75	3.002	1.496	CT	1.518	0.31	23.79		1980	RA001
				2.52	2.52	2.000	1.000	CT	0.980	0.29	23.10		1972	B4368
				2.52	2.52	2.000	1.000	CT	0.960	0.28	22.60		1972	B4368
				1.50	1.50	3.009	1.499	CT	1.595	0.28	23.60		1978	MPC01
				1.37	1.37	3.002	1.400	CT	1.591	0.27	22.60		1978	MPC01
				1.62	1.62	2.978	1.376	CT	1.489	0.25	22.90		1978	MPC01
						3.000	1.451	CT	1.524	0.29	24.10	25.1/	1980	RA001
												2.3		
TB51	P	3.50	81	T-L		3.000	1.498	CT	1.618	0.37	24.40		1973	86213
		3.50				3.000	1.498	CT	1.601	0.39	25.00	24.7/	1973	86213



TABLE 7.8.2.1 (Con't)

CONDITION	--PRODUCT--			TEST SPECIMEN ORIENT	YIELD STRENGTH (KSI)	ALUMINUM 2124			K (IC)			K (IC) STAN	DATE	REFER	
	FORM	THICK (IN)	TEMP (F)			-----SPECIMEN-----			CRACK LENGTH (IN)	2.5* K (IC)/TYS**2 (IN)	K (IC) MEAN DEV (KSI*SQRT IN)				
						WIDTH (IN)	THICK (IN)	DESIGN							
						W	B	A							
T831	P	2.50	250	T-L	57.3	2.000	1.000	CT	----	0.56	27.10	1974	88742		
		2.50			57.3	2.000	1.000	CT	----	0.56	26.90	1974	88742		
		2.50			57.3	2.000	1.000	CT	----	0.59	27.70	1974	88742	0.4	
T831	P	2.50	R.T.	S-T	62.3	2.000	1.000	CT	----	0.40	24.70	1974	88742		
		2.50			62.3	2.000	1.000	CT	----	0.43	25.80	1974	88742		
		2.50			62.3	2.000	1.000	CT	----	0.44	26.00	1974	88742	0.7	
T831	P	2.50	250	S-T	55.9	2.000	1.000	CT	----	0.53	26.20	1974	88742		
		2.50			55.9	2.000	1.000	CT	----	0.46	24.60	1974	88742	1.1	
T831	P	1.50	R.T.	S-L	----	1.001	0.501	CT	0.501	----	19.50	1978	RA001		
		1.50			----	1.001	0.502	CT	0.503	----	20.20	1978	RA001		
		1.50			----	1.002	0.498	CT	0.489	----	18.40	1980	RA001		
		1.50			----	1.001	0.497	CT	0.525	----	20.50	1980	RA001		
		1.50			----	1.001	0.497	CT	0.518	----	20.40	1980	RA001		
		6.00			52.7	2.015	0.999	CT	1.068	0.48	23.40	1978	WPC01		
		6.00			52.7	1.998	0.997	CT	0.977	0.44	22.30	1978	WPC01		
		6.00			52.8	1.998	0.997	CT	1.029	0.51	23.90	1978	RA001		
		6.00			53.0	2.000	1.000	CT	22.40	0.42	22.20	1978	WPC01		
		5.50			53.2	1.785	0.999	CT	1.052	0.44	22.50	1978	WPC01		
		5.50			53.9	2.014	1.000	CT	0.987	0.52	24.80	1978	WPC01		
		5.50			54.0	2.002	0.999	CT	1.021	0.50	24.60	1978	WPC01		
		5.00			54.1	1.992	1.002	CT	0.996	0.48	24.30	1978	WPC01		
		6.00			54.2	1.996	1.000	CT	0.998	0.34	20.10	1978	WPC01		
		4.90			54.2	3.000	1.498	CT	1.480	0.43	22.70	1978	RA002		
		5.00			54.2	2.004	0.998	CT	1.002	0.34	20.50	1978	WPC01		
		6.00			54.3	1.006	0.496	CT	0.533	0.34	20.50	1978	WPC01		
	5.50			54.3	2.019	0.999	CT	0.969	0.38	21.60	1978	WPC01			
	5.12			54.4	1.991	0.999	CT	1.075	0.40	21.80	1978	WPC01			
	4.90			54.4	1.788	1.000	CT	0.954	0.32	19.60	1978	WPC01			
	6.00			54.6	3.000	1.500	CT	1.500	0.44	23.10	1978	WPC01			
	5.75			54.6	1.999	0.996	CT	0.986	0.36	20.90	1980	RA001			
	5.00			54.6	1.992	0.996	CT	0.996	0.38	21.80	1978	WPC01			
	5.50			54.7	1.984	0.999	CT	0.972	0.42	22.80	1978	WPC01			
	6.00			54.8	3.000	1.500	CT	1.530	0.50	24.50	1972	84368			
	54.8			54.8	3.000	1.500	CT	1.530	0.50	24.50	1972	84368			
	5.00			54.9	2.984	1.199	CT	1.552	0.38	21.90	1978	WPC01			
	4.50			55.2	2.004	0.996	CT	0.973	0.43	23.10	1980	RA001			

TABLE 7.8.2.1 (Con't)

CONDITION	ALUMINUM				K(1C)		K(1C) STAN DEV	DATE	REFER		
	---PRODUCT---		-----SPECIMEN-----		CRACK LENGTH (IN)	2.5* (IN)					
	FORM	THICK (IN)	TEST TEMP (F)	SPECIMEN ORIENT						YIELD STRENGTH (KSI)	WIDTH (IN)
	P	5.50	R.T.	S-L	1.988	1.000	CT	1.014	0.52	25.90	1978 MPC01
T851		5.00			2.974	1.500	CT	1.576	0.46	23.90	1978 MPC01
		5.12			2.015	0.978	CT	1.048	0.46	24.20	1978 MPC01
		5.50			2.000	0.978	CT	0.978	0.35	20.90	1980 RA001
		6.00			1.993	1.000	CT	1.056	0.48	24.60	1978 MPC01
		6.00			1.996	1.000	CT	1.018	0.48	24.80	1978 MPC01
		5.50			2.021	0.998	CT	0.970	0.40	22.40	1978 MPC01
		5.00			1.998	1.000	CT	0.988	0.36	21.29	1979 RA001
		4.90			3.005	1.500	CT	1.517	0.36	21.40	1978 RA002
		5.00			2.972	1.498	CT	1.486	0.36	21.60	1978 MPC01
		5.00			2.000	0.999	CT	0.997	0.36	21.29	1980 RA001
		6.00			2.002	0.996	CT	1.002	0.44	23.60	1980 RA001
		5.25			2.975	1.500	CT	1.547	0.38	22.00	1978 MPC01
		5.50			2.010	1.000	CT	1.005	0.28	19.20	1978 MPC01
		5.50			1.990	1.000	CT	1.035	0.32	20.30	1978 MPC01
		6.00			1.982	1.000	CT	1.011	0.48	24.80	1978 MPC01
		4.25			2.000	0.929	CT	0.957	0.33	20.60	1980 RA001
		5.00			2.980	1.498	CT	1.490	0.38	22.10	1978 MPC01
		5.50			2.010	1.000	CT	1.009	0.30	19.90	1978 MPC01
		4.50			2.000	1.001	CT	0.992	0.38	22.00	1978 RA002
		4.90			1.996	0.998	CT	1.018	0.32	20.60	1978 MPC01
		5.25			2.016	1.000	CT	1.008	0.28	19.30	1978 MPC01
		4.00			2.002	0.997	CT	1.026	0.38	22.29	1980 RA001
		5.50			2.008	1.000	CT	1.004	0.46	24.40	1978 MPC01
		5.50			1.994	0.999	CT	1.017	0.38	22.50	1978 MPC01
		6.00			1.998	0.998	CT	0.998	0.43	23.50	1978 RA001
	4.62			3.033	1.499	CT	1.456	0.46	24.70	1978 MPC01	
	5.50			2.000	1.000	CT	1.020	0.36	22.00	1978 MPC01	
	2.50			1.999	1.000	CT	1.052	0.39	21.29	1978 RA002	
	4.90			3.000	1.499	CT	1.596	0.43	23.60	1978 RA002	
	4.00			2.000	0.998	CT	0.980	0.36	21.60	1980 RA001	
	5.50			1.992	0.997	CT	0.956	0.32	20.70	1978 MPC01	
	4.50			1.998	0.998	CT	1.009	0.37	22.10	1979 RA001	
	5.50			2.012	1.000	CT	1.006	0.36	21.80	1978 MPC01	
	4.62			1.996	0.999	CT	0.996	0.30	20.20	1978 MPC01	
	5.50			2.008	1.000	CT	1.004	0.28	19.70	1978 MPC01	
	4.90			3.000	1.499	CT	1.526	0.37	22.00	1978 RA002	
	5.00			2.988	1.499	CT	1.494	0.38	22.60	1978 MPC01	
	5.00			1.997	0.998	CT	1.005	0.35	21.40	1979 RA001	

TABLE 7.8.2.1 (Con't)

CONDITION	ALUMINUM				2124				K(1C)				DATE	REFER
	--PRODUCT--		TEST SPECIMEN ORIENT	YIELD STRENGTH (KSI)	-----SPECIMEN-----		CRACK LENGTH (IN)	2.5* (K(1C)/TYS)**2 (IN)	K(1C) MEAN DEV (KBI*SQRT IN)	K(1C) STAN DEV				
	FORM	THICK (IN)			THICK (IN)	DESIGN					A	B		
T851	P	4 00	R. T.	B-L	56.9	2.002	0.999	CT	0.984	0.35	21.50	1980	RA001	
		5 50			57.0	2.002	1.000	CT	1.001	0.28	19.70	1978	MPC01	
		5 50			57.0	1.994	1.000	CT	1.017	0.24	17.70	1978	MPC01	
		5 50			57.0	2.014	1.000	CT	1.007	0.25	18.30	1978	MPC01	
		5 50			57.0	1.994	1.000	CT	0.997	0.25	18.50	1978	MPC01	
		4 50			57.0	2.017	0.999	CT	1.069	0.42	23.50	1978	MPC01	
		5 50			57.1	2.000	1.000	CT	1.000	0.27	19.00	1978	MPC01	
		4 75			57.1	2.000	0.998	CT	0.980	0.59	22.79	1980	RA001	
		5 50			57.1	1.998	1.000	CT	0.999	0.30	20.50	1978	MPC01	
		2 20			57.1	1.503	0.748	CT	0.774	0.27	19.00	1980	RA001	
		5 50			57.1	2.008	1.000	CT	1.004	0.34	21.60	1978	MPC01	
		5 50			57.1	2.010	1.000	CT	1.005	0.34	21.60	1978	MPC01	
		5 00			57.1	2.012	1.000	CT	1.006	0.40	23.20	1978	MPC01	
		5 50			57.3	2.010	1.000	CT	1.005	0.28	19.70	1978	MPC01	
		4 50			57.3	3.000	1.500	CT	1.540	0.51	25.80	1972	84368	
		4 50			57.3	3.000	1.500	CT	1.540	0.47	24.90	1972	84368	
		4 00			57.3	1.998	0.999	CT	1.022	0.34	21.20	1978	RA001	
		5 50			57.5	3.000	1.500	CT	1.470	0.43	23.90	1972	84368	
		5 50			57.5	3.000	1.500	CT	1.500	0.42	23.60	1972	84368	
		5 50			57.5	1.998	1.000	CT	0.999	0.28	20.00	1978	MPC01	
		4 00			57.5	2.000	0.999	CT	0.984	0.33	21.20	1980	RA001	
		5 50			57.5	1.988	1.000	CT	1.014	0.42	23.70	1978	MPC01	
		5 50			57.6	1.988	1.000	CT	1.014	0.28	19.90	1978	MPC01	
		4 31			57.6	1.992	0.999	CT	1.036	0.34	21.60	1978	MPC01	
		5 50			57.6	2.006	0.999	CT	1.003	0.32	20.80	1978	MPC01	
		4 00			57.6	3.001	1.500	CT	1.564	0.34	21.50	1978	RA001	
		5 50			57.6	1.986	1.000	CT	0.993	0.34	21.60	1978	MPC01	
		5 00			57.6	1.998	0.997	CT	0.997	0.36	22.10	1978	RA001	
		5 00			57.6	1.992	1.000	CT	1.016	0.40	23.20	1978	MPC01	
		4 55			57.6	2.004	0.999	CT	0.985	0.34	21.50	1980	RA001	
	5 50			57.7	2.022	1.000	CT	1.011	0.30	20.20	1978	MPC01		
	4 50			57.7	2.017	0.999	CT	1.049	0.38	22.70	1978	MPC01		
	3 00			57.8	2.002	1.001	CT	1.001	0.30	20.70	1978	MPC01		
	4 00			57.8	2.987	1.498	CT	1.643	0.40	23.50	1978	MPC01		
	5 50			57.8	2.000	1.000	CT	1.000	0.36	22.00	1978	MPC01		
	3 50			57.8	1.993	1.001	CT	1.096	0.32	21.00	1978	MPC01		
	5 00			57.8	2.000	1.001	CT	1.009	0.29	19.70	1978	RA002		
	5 50			57.8	1.984	1.000	CT	1.012	0.42	24.20	1978	MPC01		
	5 50			57.9	1.992	1.000	CT	0.996	0.28	20.00	1978	MPC01		

TABLE 7.8.2.1 (Con't)

CONDITION	--PRODUCT--			TEST SPECIMEN ORIENT	YIELD STRENGTH (KSI)	ALUMINUM 2124			K(1C)			K(1C)/TYS)*2 (IN)	K(1C) MEAN DEV (KSI*SQRT IN)	K(1C) STAN DEV	DATE	REFER
	FORM	THICK (IN)	TEMP (F)			-----SPECIMEN-----			CRACK LENGTH (IN)	2.5* (IN)						
						WIDTH (IN)	THICK (IN)	DESIGN								
T831	P	5.50	R. T.	8-L	57.9	2.008	1.000	CT	1.004	0.25	19.00	1978	WPC01			
		3.62			58.0	2.006	0.998	CT	1.003	0.32	21.30	1978	WPC01			
		5.50			58.0	3.008	1.501	CT	1.504	0.38	23.10	1978	WPC01			
		4.00			58.0	2.004	1.001	CT	1.002	0.36	22.30	1978	WPC01			
		5.00			58.1	2.010	1.000	CT	1.005	0.38	23.00	1978	WPC01			
		2.50			58.1	1.986	1.000	CT	1.013	0.40	23.80	1978	WPC01			
		5.50			58.1	2.016	1.000	CT	1.008	0.38	22.70	1978	WPC01			
		5.50			58.1	2.002	1.000	CT	1.001	0.40	23.40	1978	WPC01			
		5.50			58.1	3.024	1.500	CT	1.512	0.42	23.90	1978	WPC01			
		2.50			58.1	2.008	0.996	CT	1.004	0.30	20.50	1978	WPC01			
		5.00			58.1	1.992	1.000	CT	1.016	0.34	21.90	1978	WPC01			
		4.90			58.1	2.000	1.001	CT	1.010	0.34	21.60	1978	RA002			
		2.50			58.1	2.018	1.000	CT	1.029	0.42	24.30	1978	WPC01			
		3.00			58.2	2.004	0.997	CT	1.030	0.31	20.70	1980	RA001			
		5.50			58.2	2.010	1.000	CT	1.025	0.30	20.50	1978	WPC01			
		2.70			58.2	1.988	1.002	CT	0.974	0.42	24.10	1978	WPC01			
		5.00			58.2	2.004	0.999	CT	1.023	0.40	22.90	1978	WPC01			
		5.00			58.2	1.984	0.999	CT	1.012	0.38	22.90	1978	WPC01			
		5.50			58.2	3.008	1.500	CT	1.504	0.40	23.70	1978	WPC01			
		5.50			58.3	1.996	1.000	CT	0.998	0.30	20.60	1978	WPC01			
		5.25			58.3	3.020	1.500	CT	1.510	0.44	24.80	1978	WPC01			
		3.12			58.3	2.016	1.001	CT	0.988	0.36	22.40	1978	WPC01			
		5.50			58.3	1.998	1.000	CT	0.999	0.30	20.50	1978	WPC01			
		5.50			58.3	1.998	1.000	CT	0.999	0.30	20.60	1978	WPC01			
		5.50			58.3	2.014	1.000	CT	1.007	0.40	23.40	1978	WPC01			
		5.50			58.3	2.014	1.000	CT	1.007	0.28	20.00	1978	WPC01			
		3.00			58.3	2.000	0.998	CT	0.983	0.32	20.90	1980	RA001			
		5.50			58.3	2.016	0.990	CT	1.008	0.30	20.90	1978	WPC01			
5.50			58.3	2.004	0.999	CT	1.002	0.50	26.60	1978	WPC01					
4.00			58.4	1.999	1.000	CT	1.015	0.28	19.79	1979	RA001					
1.81			58.4	1.502	0.748	CT	0.766	0.24	18.50	1978	WPC01					
4.50			58.4	2.978	1.500	CT	1.489	0.46	25.20	1978	WPC01					
5.50			58.4	2.020	0.997	CT	1.010	0.28	20.40	1978	WPC01					
5.00			58.4	3.010	1.500	CT	1.565	0.40	23.40	1978	WPC01					
2.50			58.5	1.996	1.000	CT	0.998	0.30	20.70	1978	WPC01					
5.50			58.5	2.018	1.000	CT	1.009	0.34	22.00	1978	WPC01					
4.25			58.5	1.987	0.999	CT	1.033	0.40	23.50	1978	WPC01					
4.25			58.5	1.996	1.000	CT	0.998	0.27	19.60	1978	WPC01					
5.00			58.6	1.983	0.999	CT	1.031	0.36	22.30	1978	WPC01					

TABLE 7.8.2.1 (Con't)

CONDITION	--PRODUCT--			TEST SPECIMEN ORIENT	YIELD STRENGTH (KSI)	ALUMINUM			K(1C)			K(1C) STAN DEV	DATE	REFER		
	FORM	THICK (IN)	THICK (IN)			R. T.	S-L	-----SPECIMEN-----			CRACK LENGTH (IN)				2.5% (IN)	K(1C)/TVS**2 (KSI*SQRT IN)
								WIDTH (IN)	THICK (IN)	DESIGN						
T831	P	5.50				58.6	2.006	0.999	CT	1.003	0.30	20.80	1978	MPC01		
		3.50				58.6	2.008	1.000	CT	1.024	0.34	21.80	1978	MPC01		
		5.00				58.6	1.988	1.000	CT	1.014	0.42	24.50	1978	MPC01		
		5.50				58.6	2.008	1.000	CT	1.004	0.40	23.90	1978	MPC01		
		4.50				58.6	2.996	1.500	CT	1.498	0.48	26.00	1978	MPC01		
		5.00				58.6	1.994	0.999	CT	1.017	0.38	23.00	1978	MPC01		
		4.00				58.6	1.996	0.999	CT	0.998	0.32	21.10	1978	MPC01		
		5.50				58.6	1.998	1.000	CT	0.999	0.38	22.90	1978	MPC01		
		5.50				58.6	2.018	0.999	CT	1.009	0.48	26.00	1978	MPC01		
		5.50				58.7	2.010	1.000	CT	1.005	0.27	19.90	1978	MPC01		
		3.54				58.7	1.998	0.997	CT	0.999	0.32	21.70	1978	MPC01		
		5.50				58.8	2.016	1.000	CT	1.008	0.48	26.00	1978	MPC01		
		5.50				58.8	2.004	0.998	CT	1.002	0.38	23.20	1978	MPC01		
		5.50				58.8	2.000	1.000	CT	1.000	0.36	22.50	1978	MPC01		
		4.25				58.8	2.002	1.000	CT	1.001	0.34	21.90	1978	MPC01		
		3.50				58.8	1.996	1.000	CT	1.078	0.30	20.70	1978	MPC01		
		5.50				58.8	2.014	1.000	CT	1.007	0.34	22.30	1978	MPC01		
		4.50				58.8	2.999	1.500	CT	1.487	0.34	21.79	1978	RA002		
		5.50				58.8	2.006	0.998	CT	1.003	0.40	23.80	1978	MPC01		
		5.50				58.9	2.020	1.000	CT	1.010	0.28	20.30	1978	MPC01		
		4.00				58.9	1.984	1.001	CT	1.012	0.38	23.10	1978	MPC01		
		4.50				58.9	2.992	1.500	CT	1.496	0.44	25.00	1978	MPC01		
		4.25				59.0	1.996	1.000	CT	1.018	0.36	23.00	1978	MPC01		
		5.00				59.1	1.988	1.000	CT	1.014	0.34	22.00	1978	MPC01		
		5.00				59.1	1.986	1.000	CT	1.013	0.34	22.00	1978	MPC01		
		5.50				59.1	2.000	1.000	CT	1.400	0.30	20.79	1978	GD003		
		5.50				59.1	2.002	1.000	CT	1.001	0.36	22.80	1978	MPC01		
		5.50				59.1	2.000	1.000	CT	1.400	0.34	22.00	1978	GD003		
		5.50				59.1	1.996	1.000	CT	0.998	0.28	20.20	1978	MPC01		
		5.00				59.1	1.984	0.999	CT	1.012	0.32	21.60	1978	MPC01		
		5.00				59.1	2.010	1.000	CT	1.005	0.36	23.00	1978	MPC01		
		2.75				59.1	2.000	1.000	CT	0.990	0.29	20.29	1978	RA002		
	5.50				59.1	1.980	1.000	CT	0.990	0.46	23.90	1978	MPC01			
	5.50				59.1	2.000	1.000	CT	1.400	0.32	21.40	1978	GD003			
	5.50				59.1	2.008	1.000	CT	1.004	0.42	24.30	1978	MPC01			
	3.12				59.2	1.998	0.999	CT	1.004	0.40	23.70	1978	RA001			
	5.00				59.2	1.986	1.001	CT	1.013	0.36	22.90	1978	MPC01			
	3.12				59.2	2.018	0.996	CT	0.989	0.32	21.80	1978	MPC01			
	4.50				59.2	2.998	1.500	CT	1.499	0.48	26.30	1978	MPC01			

TABLE 7.8.2.1 (Con't)

CONDITION	ALUMINUM				K(IIC)				K(IIC) STAN K(IIC) MEAN DEV (KSI*SQRT IN)	DATE	REFER		
	--PRODUCT--		TEST SPECIMEN ORIENT	YIELD STRENGTH (KSI)	-----SPECIMEN-----		CRACK LENGTH (IN)	2.5* (K(IIC)/TVS)**2 (IN)					
	FORM	THICK (IN)			WIDTH (IN)	THICK (IN)						DESIGN	
1851	P	4.50	R.T.	5-L	59.2	3.018	1.500	CT	1.509	0.48	26.10	1978	MPC01
		5.00			59.2	2.024	1.001	CT	1.012	0.36	22.90	1978	MPC01
		5.00			59.3	1.992	1.001	CT	1.016	0.40	23.90	1978	MPC01
		5.50			59.3	1.998	1.000	CT	0.999	0.42	24.90	1978	MPC01
		4.00			59.3	2.000	1.000	CT	0.980	0.38	23.40	1972	84368
		4.25			59.3	1.990	0.987	CT	1.015	0.42	24.40	1978	MPC01
		5.00			59.3	1.978	1.001	CT	1.009	0.42	24.70	1978	MPC01
		4.00			59.3	2.000	1.000	CT	0.980	0.44	24.80	1972	84368
		5.50			59.3	2.008	1.000	CT	1.024	0.50	26.90	1978	MPC01
		4.25			59.3	2.024	1.000	CT	1.012	0.30	21.20	1978	MPC01
		5.00			59.3	2.014	1.001	CT	1.007	0.40	24.00	1978	MPC01
		5.50			59.4	2.018	1.000	CT	1.009	0.34	22.20	1978	MPC01
		4.25			59.4	1.998	1.000	CT	0.999	0.40	23.90	1978	MPC01
		4.25			59.4	1.994	1.000	CT	1.017	0.38	23.70	1978	MPC01
		3.12			59.4	2.000	0.992	CT	1.000	0.30	21.20	1978	MPC01
		2.50			59.4	2.000	1.001	CT	1.018	0.35	22.50	1978	RA002
		4.25			59.4	1.994	1.001	CT	0.997	0.50	27.20	1978	MPC01
		1.75			59.4	1.002	0.499	CT	0.511	0.30	20.70	1980	RA001
		4.25			59.5	1.990	1.000	CT	1.015	0.48	26.30	1978	MPC01
		5.50			59.5	2.006	1.000	CT	1.003	0.36	22.70	1978	MPC01
		3.00			59.5	2.000	0.999	CT	1.000	0.30	21.00	1978	MPC01
		5.25			59.5	3.012	1.500	CT	1.506	0.42	24.50	1978	MPC01
		4.31			59.6	2.000	1.000	CT	0.970	0.42	24.50	1972	84368
		5.50			59.6	1.977	1.000	CT	1.008	0.40	24.30	1978	MPC01
		5.50			59.6	1.986	1.000	CT	1.013	0.32	21.80	1978	MPC01
		5.50			59.6	2.010	1.000	CT	1.005	0.34	22.50	1978	MPC01
		4.31			59.6	2.000	1.000	CT	0.950	0.41	24.10	1972	84368
		3.00			59.6	1.997	0.998	CT	0.999	0.26	19.50	1978	RA001
		4.25			59.7	2.014	1.002	CT	1.007	0.44	25.30	1978	MPC01
		3.50			59.7	2.004	0.995	CT	0.999	0.27	19.70	1980	RA001
		2.00			59.7	1.500	0.749	CT	0.756	0.38	23.29	1980	RA001
		5.50			59.8	2.012	1.000	CT	1.006	0.34	22.50	1978	MPC01
		3.50			59.8	1.998	0.998	CT	1.001	0.32	21.70	1979	RA001
		3.25			59.8	1.989	0.999	CT	1.054	0.30	21.20	1978	MPC01
		5.50			59.8	1.987	1.000	CT	1.033	0.28	20.50	1978	MPC01
		4.50			59.8	3.000	1.500	CT	1.530	0.36	22.70	1972	84368
		4.50			59.8	3.000	1.500	CT	1.520	0.35	22.50	1972	84368
		3.54			59.8	2.014	1.000	CT	1.007	0.34	22.30	1978	MPC01
		5.00			59.8	2.010	1.000	CT	1.005	0.36	23.10	1978	MPC01

TABLE 7.8.2.1 (Con't)

CONDITION	ALUMINUM			2124			K(1C)			K(1C) STAN		
	FORM	THICK (IN)	YIELD STRENGTH (KSI)	SPECIMEN			CRACK LENGTH (IN)	2.5* (IN)	K(1C)/TVS)*2 (KSI*SQRT IN)	K(1C) MEAN DEV (KSI*SQRT IN)	DATE	REFER
				W	B	DESIGN						
T831	P	4.25	R. T.	S-L	W	B	DESIGN	A	0.27	20.30	1978	MPC01
		2.00			1.994	1.000	CT	1.017	0.27	20.30	1978	MPC01
		2.50			1.502	0.751	CT	0.751	0.22	18.40	1978	MPC01
		3.00			1.498	0.744	CT	0.760	0.26	19.60	1980	RA001
		3.50			2.006	1.001	CT	1.003	0.27	19.80	1978	MPC01
		4.00			2.000	1.000	CT	0.990	0.27	19.80	1972	84368
		4.50			2.000	1.000	CT	0.990	0.32	21.40	1972	84368
		5.00			2.998	1.500	CT	1.499	0.48	26.50	1978	MPC01
		2.90			1.988	1.000	CT	0.999	0.28	20.40	1978	MPC01
		3.00			2.003	0.995	CT	0.974	0.30	21.00	1978	MPC01
		4.00			1.996	0.998	CT	1.004	0.39	23.70	1980	RA001
		4.50			2.002	0.998	CT	0.998	0.44	25.70	1978	MPC01
		3.54			3.008	1.501	CT	1.504	0.38	23.80	1980	RA001
		3.12			2.004	0.998	CT	1.002	0.42	24.80	1978	MPC01
		2.50			2.010	0.996	CT	1.019	0.36	23.40	1978	MPC01
		4.50			3.029	1.500	CT	1.005	0.32	22.00	1978	MPC01
		4.25			1.986	1.000	CT	1.484	0.42	24.70	1978	MPC01
		5.50			2.016	1.000	CT	1.013	0.32	21.70	1978	MPC01
		4.00			3.000	1.500	CT	1.008	0.24	19.00	1978	MPC01
		2.50			1.999	0.999	CT	1.540	0.27	20.00	1972	84368
		4.00			2.014	0.999	CT	1.096	0.28	19.90	1978	RA002
		5.00			1.996	0.999	CT	1.007	0.34	22.60	1978	MPC01
		5.50			2.004	0.999	CT	1.018	0.30	23.00	1978	MPC01
		3.00			2.004	0.999	CT	1.022	0.30	23.10	1978	MPC01
		3.00			2.004	0.999	CT	0.963	0.29	20.70	1978	RA002
		3.00			1.999	0.998	CT	0.998	0.29	20.90	1980	RA001
		4.00			3.026	1.501	CT	0.991	0.27	20.00	1978	MPC01
		4.25			2.992	1.500	CT	1.513	0.38	23.70	1978	MPC01
		3.12			2.016	1.000	CT	1.526	0.36	22.50	1978	MPC01
		2.50			1.998	0.997	CT	1.008	0.28	20.70	1978	MPC01
		3.00			0.986	0.502	CT	1.039	0.30	21.00	1978	MPC01
		3.00			1.992	0.999	CT	0.498	0.22	18.40	1978	RA002
		3.00			1.997	0.998	CT	1.019	0.24	19.20	1978	MPC01
		5.00			2.016	1.000	CT	1.020	0.30	21.40	1978	RA001
		3.62			1.996	0.999	CT	1.008	0.25	20.00	1978	MPC01
		3.00			2.006	1.001	CT	0.979	0.25	19.50	1980	RA001
								1.023	0.27	20.20	1978	MPC01

TABLE 7.8.2.1 (Con't)

CONDITION	ALUMINUM				2124				K (IC)		K (IC) STAN K (IC) MEAN DEV (KSI*SQRT IN)	DATE	REFER
	--PRODUCT--		TEST SPECIMEN ORIENT	YIELD STRENGTH (KSI)	-----SPECIMEN-----		CRACK LENGTH (IN)	2.5* (IN)					
	FORM	THICK (IN)			THICK (IN)	DESIGN (IN)							
TB51	P	3.62	R.T.	S-L	60.9	3.014	1.499	CT	1.567	0.28	20.80	1978	MPC01
		4.25			60.9	1.984	1.000	CT	1.012	0.30	21.70	1978	MPC01
		3.50			60.9	2.016	0.997	CT	1.008	0.34	22.70	1978	MPC01
		3.00			60.9	2.000	1.000	CT	0.991	0.31	21.70	1978	RA002
		5.50			60.9	2.004	1.000	CT	1.002	0.27	20.30	1978	MPC01
		2.50			60.9	2.006	0.998	CT	1.003	0.28	21.30	1978	MPC01
		4.00			60.9	1.997	0.999	CT	1.002	0.36	23.20	1978	RA001
		2.00			61.0	1.498	0.751	CT	0.756	0.29	21.10	1978	RA002
		5.50			61.1	2.014	1.003	CT	1.007	0.32	22.30	1978	MPC01
		4.25			61.1	1.996	1.001	CT	0.998	0.36	23.90	1978	MPC01
		3.50			61.1	1.998	0.999	CT	1.022	0.33	22.20	1978	RA001
		1.62			61.2	0.986	0.503	CT	0.480	0.24	19.10	1978	RA002
		3.00			61.2	1.996	0.998	CT	1.018	0.25	19.70	1978	MPC01
		3.00			61.2	2.000	0.999	CT	0.980	0.28	20.79	1980	RA001
		3.75			61.3	3.016	1.499	CT	1.538	0.30	21.90	1978	MPC01
		2.50			61.3	1.499	0.745	CT	0.750	0.24	19.29	1980	RA001
		5.50			61.4	1.986	1.003	CT	1.013	0.34	23.00	1978	MPC01
		3.50			61.4	2.000	1.000	CT	0.990	0.43	25.40	1972	84368
		2.50			61.4	2.000	1.000	CT	1.100	0.27	20.80	1978	MPC01
		2.00			61.4	0.997	0.498	CT	0.504	0.25	19.60	1978	RA001
		3.50			61.4	2.000	1.000	CT	0.990	0.41	24.70	1972	84368
		4.90			61.4	3.000	1.500	CT	1.585	0.36	23.40	1978	RA002
		4.00			61.5	3.000	1.500	CT	1.530	0.30	21.70	1978	MPC01
		1.75			61.6	0.998	0.503	CT	0.520	0.21	17.90	1980	RA001
		3.00			61.6	2.000	1.001	CT	1.012	0.22	18.50	1978	RA002
		4.90			61.6	3.000	1.499	CT	1.592	0.35	23.10	1978	RA002
		5.50			61.6	1.986	1.000	CT	1.013	0.38	24.30	1978	MPC01
		2.35			61.7	1.502	0.750	CT	0.763	0.33	22.90	1980	RA001
		1.73			61.7	1.004	0.497	CT	0.542	0.21	18.40	1978	MPC01
		3.12			61.7	2.002	0.998	CT	0.996	0.29	21.29	1980	RA001
		3.00			61.8	1.999	0.994	CT	1.000	0.23	19.10	1980	RA001
		3.00			61.8	1.980	0.999	CT	1.010	0.27	20.80	1978	MPC01
		2.00			61.9	1.498	0.749	CT	0.794	0.25	20.10	1978	MPC01
		4.75			62.0	2.004	1.000	CT	1.002	0.25	20.40	1978	MPC01
		2.50			62.0	1.984	0.998	CT	1.012	0.24	19.70	1978	MPC01
		2.25			62.0	0.998	0.499	CT	0.539	0.24	19.80	1978	MPC01
		3.00			62.0	2.010	1.001	CT	1.009	0.27	20.80	1978	MPC01
		3.00			62.0	1.995	0.998	CT	0.960	0.30	21.60	1980	RA001
		3.00			62.0	1.997	0.999	CT	1.007	0.24	19.40	1979	RA001



TABLE 7.8.2.1 (Con't)

CONDITION	ALUMINUM				2124				K(1C)				DATE	REFER
	--PRODUCT--		TEST SPECIMEN ORIENT	YIELD STRENGTH (KSI)	-----SPECIMEN-----		CRACK LENGTH (IN)	2.5* K(1C)/(TYS)**2 (IN)	K(1C) MEAN DEV (KSI*SQRT IN)	K(1C) STAN DEV				
	FORM	THICK (IN)			THICK (IN)	WIDTH (IN)					THICK (IN)	DESIGN		
T851	P	2.50	R. T.	S-L	62.0	1.499	0.744	CT	0.741	0.23	18.90	1980	RA001	
		5.50			62.1	2.001	1.000	CT	1.006	0.30	22.00	1978	MPC01	
		2.50			62.1	2.000	1.000	CT	1.020	0.40	25.30	1978	MPC01	
		2.50			62.1	2.000	1.000	CT	0.940	0.31	21.80	1972	84368	
		3.00			62.1	1.997	0.998	CT	1.022	0.29	21.50	1979	RA001	
		2.50			62.1	2.000	1.000	CT	0.960	0.34	22.90	1972	84368	
		2.50			62.1	1.998	1.000	CT	1.019	0.38	24.50	1978	MPC01	
		3.00			62.1	2.003	0.998	CT	0.995	0.29	21.50	1980	RA001	
		1.50			62.2	0.996	0.501	CT	0.508	0.34	23.10	1978	MPC01	
		2.00			62.2	1.489	0.746	CT	0.774	0.25	20.20	1978	MPC01	
		2.75			62.2	1.988	1.001	CT	1.014	0.28	21.50	1978	MPC01	
		2.75			62.2	2.004	0.996	CT	1.004	0.31	22.20	1980	RA001	
		1.75			62.2	1.000	0.500	CT	0.503	0.21	18.10	1978	RA002	
		1.50			62.2	0.998	0.501	CT	0.509	0.34	23.10	1978	MPC01	
		2.50			62.2	1.502	0.750	CT	0.768	0.30	21.60	1980	RA001	
		4.75			62.4	1.994	1.001	CT	1.017	0.30	22.40	1978	MPC01	
		2.75			62.4	1.499	0.746	CT	0.755	0.33	22.79	1980	RA001	
		2.50			62.5	2.000	1.001	CT	1.020	0.24	19.60	1978	MPC01	
		5.50			62.6	2.000	1.000	CT	1.000	0.28	21.60	1978	MPC01	
		1.75			62.6	0.979	0.500	CT	0.475	0.31	22.29	1978	RA002	
		2.50			62.6	2.000	1.001	CT	0.979	0.28	21.10	1978	RA002	
		5.50			62.6	2.000	1.000	CT	1.000	0.30	22.10	1978	MPC01	
		2.50			62.6	2.020	0.998	CT	0.990	0.30	22.10	1978	MPC01	
		2.00			62.6	1.512	0.751	CT	0.771	0.22	19.20	1978	MPC01	
		2.04			62.7	1.500	0.750	CT	0.730	0.21	18.10	1972	84368	
		2.04			62.7	1.500	0.750	CT	0.730	0.20	17.60	1972	84368	
		2.50			62.7	1.500	0.751	CT	0.776	0.22	18.70	1980	RA001	
		2.50			62.7	1.500	0.747	CT	0.738	0.28	21.00	1980	RA001	
	2.03			62.8	1.471	0.750	CT	0.764	0.32	23.00	1978	MPC01		
	1.50			62.8	1.008	0.498	CT	0.534	0.28	21.40	1978	MPC01		
	2.25			62.8	1.510	0.749	CT	0.785	0.21	18.50	1978	MPC01		
	2.00			62.8	1.493	0.748	CT	0.791	0.29	20.60	1978	MPC01		
	2.00			62.9	1.489	0.749	CT	0.774	0.28	21.50	1978	MPC01		
	3.00			62.9	2.015	1.001	CT	1.048	0.30	22.60	1978	MPC01		
	2.03			62.9	1.496	0.750	CT	0.763	0.36	24.10	1978	MPC01		
	2.50			62.9	2.000	1.000	CT	0.930	0.28	21.20	1972	84368		
	2.50			62.9	2.000	1.000	CT	0.930	0.28	21.10	1972	84368		
	1.81			63.0	1.006	0.496	CT	0.533	0.18	17.10	1978	MPC01		
	1.50			63.0	1.002	0.500	CT	0.521	0.32	22.80	1978	MPC01		

TABLE 7.8.2.1 (Con't)

CONDITION	ALUMINUM		YIELD STRENGTH (KSI)	SPECIMEN			W	K(1C)		CRACK LENGTH (IN)	2.5*		K(1C) MEAN DEV (KSI*SQRT IN)	DATE	REFER
	P	FORM	THICK (IN)	TEST TEMP (F)	SPECIMEN ORIENT	S-L	W	WIDTH (IN)	THICK (IN)	DESIGN	A	B	K(1C)	STAN	REFER
1851	P	2 00	1.50	2 00	R. T.	S-L	1.002	0.495	CT	0.531	0.22	19.20	1978	MPC01	
		1.50	1.57	2 00			1.000	0.500	CT	0.510	0.27	21.00	1978	MPC01	
		2 40	2 40	2 40			1.500	0.747	CT	0.490	0.29	21.60	1972	84368	
		3 00	3 00	3 00			1.994	1.001	CT	0.749	0.27	20.79	1980	RA001	
		1.81	1.81	2 75			1.994	1.001	CT	0.509	0.16	22.40	1978	MPC01	
		2 75	2 75	2 75			2.000	0.998	CT	0.983	0.32	22.79	1980	RA001	
		2 50	2 50	2 50			2.000	1.000	CT	0.960	0.27	21.80	1972	84368	
		1.55	1.55	1 55			2.000	1.000	CT	0.970	0.31	22.20	1972	84368	
		1 55	1 55	1 55			0.999	0.501	CT	0.469	0.22	19.00	1980	RA001	
		1 75	1 75	1 75			1.000	0.498	CT	0.540	0.28	22.10	1978	MPC01	
		2 50	2 50	2 50			1.010	0.499	CT	0.525	0.18	17.50	1978	MPC01	
		2 35	2 35	2 35			2.000	0.998	CT	0.960	0.27	21.20	1978	MPC01	
		1.50	1.50	1 50			0.998	0.498	CT	0.539	0.18	17.40	1978	MPC01	
		2 00	2 00	2 00			0.999	0.501	CT	0.487	0.27	21.00	1980	RA001	
		3 12	3 12	3 12			1.502	0.751	CT	0.766	0.28	22.00	1978	MPC01	
		2 75	2 75	2 75			2.006	0.999	CT	1.003	0.24	20.50	1978	MPC01	
		1.55	1.55	1 55			1.499	0.752	CT	0.767	0.29	21.90	1978	RA002	
		1.57	1.57	1 57			1.000	0.497	CT	0.540	0.28	21.30	1972	84368	
		2 50	2 50	2 50			1.000	0.500	CT	0.490	0.27	20.50	1972	84368	
		2 50	2 50	2 50			2.000	0.998	CT	0.500	0.25	20.90	1978	RA002	
		2 00	2 00	2 00			1.499	0.745	CT	0.754	0.17	17.20	1980	RA001	
		1 75	1 75	1 75			1.518	0.751	CT	0.774	0.25	20.70	1978	MPC01	
		2 00	2 00	2 00			1.012	0.501	CT	0.526	0.19	18.30	1978	MPC01	
		2 00	2 00	2 00			1.499	0.751	CT	0.793	0.19	18.00	1978	RA002	
		1 75	1 75	1 75			0.979	0.502	CT	0.509	0.24	20.10	1978	RA002	
		2 50	2 50	2 50			2.002	0.998	CT	1.021	0.18	18.00	1978	MPC01	
		2 00	2 00	2 00			1.504	0.751	CT	0.782	0.22	20.00	1978	MPC01	
		2 00	2 00	2 00			1.498	0.746	CT	0.746	0.18	17.79	1980	RA001	
		2 25	2 25	2 25			1.489	0.749	CT	0.774	0.19	18.30	1978	MPC01	
		2 00	2 00	2 00			1.491	0.750	CT	0.805	0.22	20.10	1978	MPC01	
		2 00	2 00	2 00			1.500	0.750	CT	0.740	0.22	19.20	1972	84368	
		1 73	1 73	1 73			0.986	0.502	CT	0.740	0.22	19.10	1972	84368	
		1 75	1 75	1 75			0.998	0.500	CT	0.467	0.26	21.10	1978	RA002	
		1 75	1 75	1 75			1.000	0.500	CT	0.495	0.18	17.50	1980	RA001	
		1 75	1 75	1 75			1.010	0.505	CT	0.500	0.17	17.29	1978	RA001	
		1 75	1 75	1 75			1.000	0.500	CT	0.505	0.18	18.10	1978	MPC01	
		1 75	1 75	1 75			1.000	0.500	CT	0.460	0.19	18.20	1972	84368	

TABLE 7.8.2.1 (Con't)

CONDITION	ALUMINUM				2124				K(1C)				DATE	REFER	
	--PRODUCT--		TEST SPECIMEN ORIENT	YIELD STRENGTH (KSI)	-----SPECIMEN-----		CRACK LENGTH (IN)	K(1C)	2.5* K(1C)/(TVS)**2 (IN)	K(1C) MEAN DEV (KSI*SQRT IN)					
	FORM	THICK (IN)			THICK (IN)	DESIGN					W (IN)	B (IN)			A (IN)
T851	P	1.75	R.T.	S-L	65.3	1.000	0.500	CT	0.490	0.22	19.50	1972	84368		
		1.57			65.4	1.000	0.500	CT	0.470	0.21	18.80	1972	84368		
		2.25			65.5	1.489	0.749	CT	0.774	0.22	19.90	1978	MPC01		
		2.50			65.6	2.016	0.999	CT	1.028	0.21	19.60	1978	MPC01		
		2.25			65.6	1.504	0.749	CT	0.782	0.25	21.30	1978	MPC01		
		2.50			65.7	1.991	1.001	CT	1.055	0.24	21.00	1978	MPC01		
		1.55			65.8	0.996	0.500	CT	0.528	0.18	18.00	1978	MPC01		
		2.50			66.1	1.500	0.749	CT	0.760	0.16	16.79	1979	RA001		
		2.52			66.3	2.000	1.000	CT	0.970	0.24	20.60	1972	84368		
		2.52			66.3	2.000	1.000	CT	0.950	0.20	18.80	1972	84368		
		1.62			66.6	1.001	0.498	CT	0.475	0.16	16.90	1980	RA001		
		1.73			67.2	1.001	0.498	CT	0.519	0.21	19.90	1978	RA002		
T851	P	1.75		S-L	67.4	1.000	0.520	CT	0.520	0.15	17.50	1978	MPC01		
		1.55			68.1	1.001	0.499	CT	0.517	0.19	18.79	21.7/	2.1	1979	RA001
		3.50	82		59.8	2.000	0.998	CT	0.986	0.35	22.40	1973	86213		
T851	P	3.50		S-L	59.8	2.000	0.998	CT	0.941	0.33	21.80	22.1/	0.4	1973	86213
		3.00	84		61.3	2.000	0.999	CT	0.931	0.38	23.90	1973	86213		
		3.00			61.6	2.000	0.999	CT	0.954	0.41	25.00	24.5/	0.8	1973	86213
T851 (SP)	P	6.00	R.T.	L-T	57.1	3.000	1.500	CT	1.522	0.65	29.10	1973	86213		
		6.00			57.1	3.000	1.500	CT	1.549	0.68	29.70	1973	86213		
		4.50			59.8	3.000	1.501	CT	1.532	0.77	33.10	1973	86213		
		4.50			59.8	3.000	1.500	CT	1.509	0.71	31.90	1973	86213		
		2.04			65.4	1.500	0.752	CT	0.752	0.26	21.10	1973	86213		
		2.04			65.4	1.500	0.752	CT	0.738	0.27	21.30	1973	86213		
		4.00			65.5	3.000	1.500	CT	1.578	0.31	23.00	1973	86213		
		4.00			65.5	2.990	1.501	CT	1.562	0.30	22.50	1973	86213		
		2.00			66.2	3.000	1.501	CT	1.555	0.52	30.30	1973	86213		
		2.00			66.2	3.000	1.502	CT	1.564	0.53	30.40	27.2/	4.7	1973	86213
		T851 (SP)	P	6.00	R.T.	T-L	55.0	3.000	1.500	CT	1.563	0.46	23.70	1973	86213
				6.00			55.0	3.000	1.500	CT	1.576	0.48	24.10	1973	86213
4.50					58.5	3.000	1.500	CT	1.567	0.51	26.50	1973	86213		
2.04					65.2	1.500	0.752	CT	0.741	0.22	19.50	1973	86213		
2.04			65.2	1.500	0.751	CT	0.729	0.22	19.40	1973	86213				

TABLE 7.8.2.1 (Con't)

CONDITION	ALUMINUM										K (IC)		K (IC) STAN DEV	DATE	REFER
	--PRODUCT-- FORM		TEST TEMP (F)	SPECIMEN ORIENT	YIELD STRENGTH (KSI)	-----SPECIMEN-----			CRACK LENGTH (IN)	2.5* (K(1C)/TYS)**2 (IN)	K (IC) MEAN (KSI±50RT IN)				
	THICK (IN)	WIDTH (IN)				THICK (IN)	DESIGN (IN)	A							
T851 (SP)	P	2.00 2.00	R. T.	T-L	65.4 65.4	3.000 3.000	1.502 1.500	CT CT	1.542 1.541	0.35 0.34	24.40 24.10	23.1/	2.7	1973 86213	1973 86213
T851 (SP)	P	6.00 6.00 4.50 4.50 4.00 4.00 2.04 2.04 2.00 2.00	R. T.	S-L	54.8 54.8 57.3 57.3 60.2 60.2 62.7 62.7 64.9 64.9	3.000 3.000 3.000 3.000 3.000 3.000 1.500 1.500 1.500 1.490	1.500 1.500 1.502 1.500 1.502 1.501 0.752 0.751 0.750 0.750	CT CT CT CT CT CT CT CT CT CT	1.526 1.539 1.543 1.542 1.560 1.540 0.729 0.726 0.739 0.739	0.50 0.50 0.51 0.47 0.27 0.28 0.20 0.21 0.22 0.22	24.50 24.50 25.80 24.90 19.90 20.00 17.60 18.10 19.20 19.10		3.2	1973 86213	1973 86213
T851 (417)	P	4.50 1.75	- 320	L-T	76.4 80.9	3.000 3.000	1.500 1.500	CT CT	1.478 1.641	0.44 0.43	31.90 33.50	32.7/	1.1	1973 86213	1973 86213
T851 (417)	P	4.50 1.75	- 112	L-T	67.6 73.2	3.000 3.000	1.501 1.499	CT CT	1.474 1.642	0.43 0.41	27.90 29.60	28.8/	1.2	1973 86213	1973 86213
T851 (417)	P	4.00 5.50 5.50 4.00 4.00 4.50 4.50 3.50 3.50 1.57 1.57 1.57 3.00 3.00	R. T.	L-T	60.6 61.1 61.1 62.5 62.5 63.1 63.4 63.9 63.9 64.2 64.2 65.2 65.4 65.4	2.000 3.000 3.000 2.000 2.000 3.000 3.000 3.000 3.000 3.000 3.000 3.000 3.000 2.000	1.000 1.501 1.501 1.000 1.000 1.501 1.500 1.501 1.501 1.501 1.501 1.500 1.412 1.499	NB CT CT NB NB CT CT CT CT CT CT CT CT CT	0.925 1.495 1.496 0.932 0.941 1.479 1.536 1.518 1.523 1.510 1.589 1.581 1.526 1.477 1.546 0.519 1.014	0.80 0.56 0.53 0.65 0.68 0.44 0.46 0.44 0.61 0.61 0.46 0.48 0.73 0.69 0.48 0.36 0.42	34.30 28.80 28.10 31.90 32.70 26.60 27.70 26.70 31.50 31.60 27.40 28.00 35.20 34.20 28.70 24.80 26.80			1973 86213	1973 86213

TABLE 7.8.2.1 (Con't)

CONDITION	--PRODUCT--			TEST SPECIMEN ORIENT	YIELD STRENGTH (KSI)	ALUMINUM			2124			K (IC)			K (IC) STAN	DATE	REFER
	FORM	THICK (IN)	TEMP (F)			-----SPECIMEN-----			CRACK LENGTH (IN)	2.5* (IN)	K (IC)/TYS)**2 (KSI*SQRT IN)	K (IC) MEAN DEV (KSI*SQRT IN)					
						WIDTH (IN)	THICK (IN)	DESIGN									
						W	B	A									
T831 (417)	P	3.00	R. T.	L-T	65.4	3.000	0.999	CT	1.536	0.45	27.80			1973	86213		
		3.00			66.2	3.000	1.412	CT	1.532	0.48	28.90			1973	86213		
		3.00			66.2	1.000	0.498	CT	0.515	0.36	25.00			1973	86213		
		3.00			66.2	2.000	0.998	CT	1.015	0.40	26.50			1973	86213		
		3.00			66.2	3.000	0.998	CT	1.530	0.48	28.90			1973	86213		
		1.75			67.0	3.000	1.501	CT	1.572	0.46	28.60			1973	86213		
		1.75			67.0	3.000	1.502	CT	1.583	0.45	28.30			1973	86213		
		1.57			67.2	3.000	1.502	CT	1.560	0.37	26.00			1973	86213		
T831 (417)	P	1.75			67.2	3.000	1.502	CT	1.555	0.39	26.50			1973	86213		
		1.75			67.6	3.000	1.499	CT	1.631	0.46	29.10	28.9/	2.8	1973	86213		
		3.50	81	L-T	65.4	3.000	1.500	CT	1.537	0.45	27.90			1973	86213		
		2.00			65.5	3.990	2.000	CT	2.087	0.62	32.50			1973	86213		
T831 (417)	P	2.00			67.9	3.990	1.995	CT	2.032	0.43	28.10	29.5/	2.6	1973	86213		
		3.75	82	L-T	61.3	2.000	0.999	CT	1.015	0.51	27.80			1973	86213		
		3.38			61.6	2.000	1.000	CT	0.959	0.47	26.70			1973	86213		
		3.38			61.6	2.000	1.000	CT	0.950	0.51	27.80			1973	86213		
		3.15			63.0	2.000	0.998	CT	0.995	0.49	28.00			1973	86213		
		3.75			64.2	2.000	0.998	CT	0.997	0.44	27.00			1973	86213		
		3.75			64.2	2.000	1.001	CT	1.000	0.45	27.10			1973	86213		
		3.75			64.6	2.000	1.000	CT	1.012	0.43	26.90			1973	86213		
T831 (417)	P	3.15			65.1	2.000	0.999	CT	0.980	0.43	27.00			1973	86213		
		3.38			65.3	2.000	1.000	CT	0.957	0.41	26.40			1973	86213		
		3.38			65.3	2.000	0.998	CT	0.965	0.41	26.30			1973	86213		
		2.50			65.4	1.990	1.002	CT	1.018	0.43	27.10			1973	86213		
		2.50			65.4	1.990	1.001	CT	1.006	0.44	27.30			1973	86213		
		2.50			65.6	4.000	1.997	CT	2.103	0.77	36.40			1973	86213		
		2.50			65.6	4.000	1.997	CT	2.097	0.78	36.70			1973	86213		
		3.15			65.7	2.000	0.999	CT	0.960	0.39	26.10			1973	86213		
T831 (417)	P	3.15			65.7	2.000	0.998	CT	0.959	0.41	26.70			1973	86213		
		2.50			65.8	4.000	1.998	CT	2.181	0.51	29.80			1973	86213		
		2.50			66.2	3.990	1.998	CT	2.146	0.69	33.70			1973	86213		
		2.50			66.2	3.990	2.000	CT	2.159	0.69	34.90			1973	86213		
		2.75			67.0	2.000	1.000	CT	0.958	0.36	25.50			1973	86213		
		2.75			67.4	2.000	0.998	CT	0.953	0.34	24.90			1973	86213		
		2.75			67.4	2.000	0.998	CT	0.945	0.34	24.80			1973	86213		
		2.75			68.6	2.000	0.999	CT	0.958	0.34	25.30			1973	86213		
T831 (417)	P	2.52			69.7	2.000	0.999	CT	0.963	0.35	26.00			1973	86213		

TABLE 7.8.2.1 (Con't)

[illegible]

TABLE 7.8.2.1 (Con't)

CONDITION	ALUMINUM				2124		K(1C)		DATE	REFER				
	--PRODUCT-- FORM	THICK (IN)	TEST SPECIMEN ORIENT	YIELD STRENGTH (KSI)	-----SPECIMEN-----		CRACK LENGTH (IN)	2.3* (K(1C)/TYS)**2 (IN)						
					WIDTH (IN)	THICK (IN)					A	B		
T851 (417)	P	2.00 2.00	81	T-L	65.3 66.7	4.000 4.000	2.000 1.999	CT CT	2.159 2.142	0.56 0.33	30.90 24.30	25.3/ 3.8	1973 1973	86213 86213
	P	3.75 3.38 3.38 3.00 3.75 3.75 3.15 3.75 3.15 2.50 2.50 2.50 2.50 2.50 3.38 2.50 3.15 3.15 2.75 1.62 2.75 2.75 2.75 2.52 2.52 2.52	82	T-L	59.2 61.0 61.0 61.8 63.0 63.0 63.4 63.8 64.2 64.2 64.4 64.4 64.4 64.7 64.8 64.8 65.0 65.0 65.3 65.4 66.1 66.1 66.9 67.0 67.6 67.6 68.6	2.000 2.000 2.000 3.000 2.000 2.000 2.000 2.000 2.000 1.990 1.990 4.000 4.000 4.000 2.000 4.000 4.000 2.000 2.000 2.000 3.000 2.000 2.000 2.000 2.000 2.000 2.000	0.999 0.998 0.998 1.500 1.001 1.000 1.000 1.001 1.000 1.001 1.001 1.997 1.999 1.997 0.998 2.001 1.998 1.001 0.998 0.999 1.500 1.000 1.001 0.998 0.998 1.000 0.995	CT CT	1.014 0.958 0.974 1.560 1.005 0.999 1.000 1.011 1.003 1.039 1.055 2.099 2.172 2.183 0.989 2.134 2.153 0.982 0.995 0.968 1.581 0.957 0.949 0.940 0.979 0.955 0.976 0.987	0.42 0.54 0.51 0.29 0.34 0.34 0.43 0.34 0.38 0.42 0.41 0.35 0.54 0.54 0.41 0.46 0.47 0.37 0.36 0.35 0.26 0.34 0.32 0.27 0.31 0.28 0.29 0.29	24.20 28.40 27.50 21.10 23.30 23.20 26.30 23.50 24.90 26.30 26.10 24.00 29.90 30.00 26.10 27.70 28.10 25.00 24.60 24.30 21.20 24.40 23.60 22.10 23.70 22.60 23.10 23.40		1973 1973	86213 86213
T851 (417)	P	4.50	- 320	S-L	72.3	3.000	1.501	CT	1.514	0.23	22.10		1973	86213
T851 (417)	P	4.50	- 112	S-L	64.8	3.000	1.500	CT	1.461	0.27	21.30		1973	86213
T851 (417)	P	5.50 5.50 4.00	R.T.	S-L	57.5 57.5 59.3	3.000 3.000 2.000	1.499 1.501 0.997	CT CT CT	1.500 1.466 0.981	0.42 0.43 0.44	23.60 23.90 24.80		1973 1973 1973	86213 86213 86213

TABLE 7.8.2.1 (Con't)

CONDITION	--PRODUCT-- FORM	THICK (IN)	TEST SPECIMEN ORIENT	YIELD (KSI)	ALUMINUM		2124		K (IC)		CRACK LENGTH (IN)	2.5* K (IC)/TVS)**2 (IN)	K (IC) MEAN (KSI*SQRT IN)	K (IC) STAN DEV	DATE	REFER
					THICK (IN)	WIDTH (IN)	THICK (IN)	DESIGN	A	B						
T851 (417)	P	4.50	R.T.	8-L	59.8	3.000	1.501	CT	1.523	0.35	22.50				1973	86213
		4.50			59.8	3.000	1.501	CT	1.534	0.36	22.70				1973	86213
		3.00			60.0	2.000	1.000	CT	1.015	0.29	20.40				1973	86213
		4.50			60.9	3.000	1.501	CT	1.459	0.29	20.70				1973	86213
		2.50			62.1	2.000	0.998	CT	0.939	0.31	21.80				1973	86213
		2.50			62.1	2.000	0.996	CT	0.963	0.34	22.90				1973	86213
		2.50			62.9	2.000	0.998	CT	0.931	0.28	21.20				1973	86213
		2.50			62.9	2.000	0.998	CT	0.926	0.28	21.10				1973	86213
		1.57			63.0	1.000	0.500	CT	0.493	0.29	21.60				1973	86213
		1.57			63.0	1.000	0.501	CT	0.500	0.28	21.00				1973	86213
		2.50			63.1	2.000	0.998	CT	0.929	0.26	20.30				1973	86213
		1.57			64.4	1.000	0.500	CT	0.489	0.27	21.30				1973	86213
		1.57			64.4	1.000	0.500	CT	0.499	0.25	20.50				1973	86213
		1.75			65.3	0.990	0.501	CT	0.459	0.19	18.20				1973	86213
		1.57			65.4	0.990	0.500	CT	0.471	0.21	18.80				1973	86213
		1.62			65.4	1.000	0.500	CT	0.488	0.16	16.70	21.3/	2.0		1973	86213
T851 (417)	P	3.75	82	8-L	58.1	2.000	1.000	CT	0.976	0.37	22.30				1973	86213
		3.38			59.6	2.000	1.001	CT	0.947	0.40	23.90				1973	86213
		3.50			59.9	2.000	0.998	CT	0.987	0.27	19.80				1973	86213
		3.50			59.9	2.000	0.998	CT	0.992	0.32	21.40				1973	86213
		3.50			61.4	1.990	1.001	CT	0.989	0.40	24.70				1973	86213
		3.50			61.4	1.990	1.001	CT	0.988	0.43	25.40				1973	86213
		3.38			61.4	2.000	0.998	CT	0.962	0.48	26.90				1973	86213
		3.75			62.2	2.000	1.001	CT	0.983	0.36	23.60				1973	86213
		3.15			62.3	2.000	1.000	CT	0.938	0.34	22.90				1973	86213
		3.15			62.6	2.000	0.999	CT	0.955	0.33	22.90				1973	86213
		2.75			63.3	2.000	1.000	CT	0.935	0.28	21.30				1973	86213
		2.50			63.5	1.990	1.001	CT	0.969	0.29	21.80				1973	86213
		2.50			63.5	1.990	1.001	CT	0.974	0.31	22.20				1973	86213
		2.75			64.2	2.000	0.998	CT	0.929	0.25	20.50				1973	86213
		2.52			65.1	2.000	1.000	CT	0.963	0.29	22.00				1973	86213
		2.75			66.0	2.000	0.999	CT	0.948	0.18	17.80				1973	86213
		2.52			66.1	2.000	0.998	CT	0.947	0.21	19.30				1973	86213
		2.52			66.3	2.000	0.998	CT	0.949	0.20	18.80				1973	86213
		2.52			66.3	2.000	0.998	CT	0.974	0.24	20.60	22.0/	2.3		1973	86213
T851 (417)	P	3.75	84	8-L	62.2	2.000	0.998	CT	0.998	0.34	23.10			1973	86213	





ALUM.  
ALLOY

2124

SPECIMEN THK: .352"  
SPECIMEN WIDTH: 4.952"  
 $K_C(Ksi\sqrt{in})$ : 102.0  
REFERENCE: G0011

CONDITION/HT: T851  
FORM: 5.00" TH PLATE  
SPECIMEN TYPE: CCP  
ORIENTATION: L-S

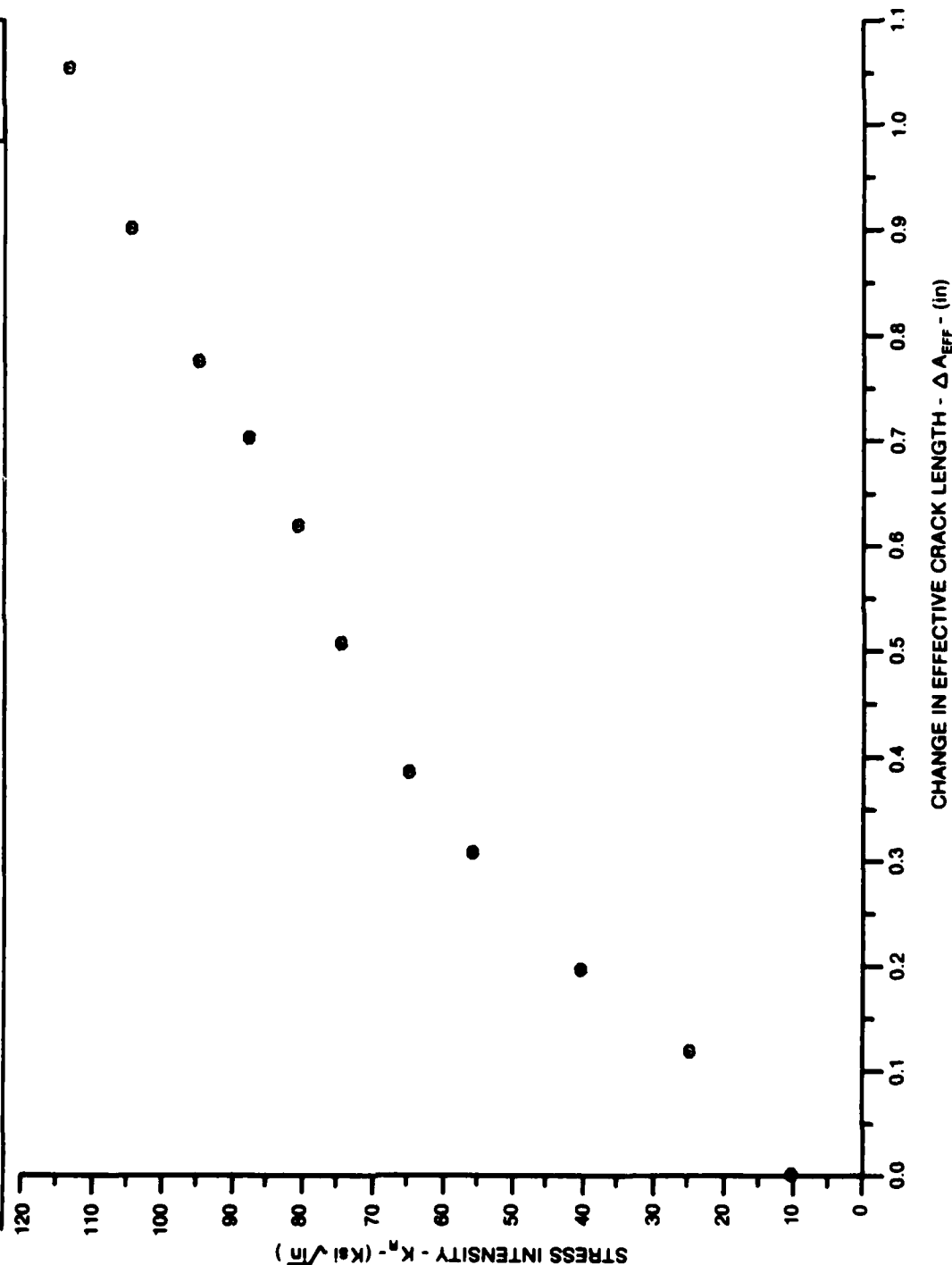


Figure 7.8.2.3

ALUM. ALLOY
2124

SPECIMEN THK: .355"  
 SPECIMEN WIDTH: 4.960"  
 $K_{IC}(KSI\sqrt{in})$ : 75.0  
 REFERENCE: GD011

CONDITION/HT: T851  
 FORM: 5.00" TH PLATE  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-S

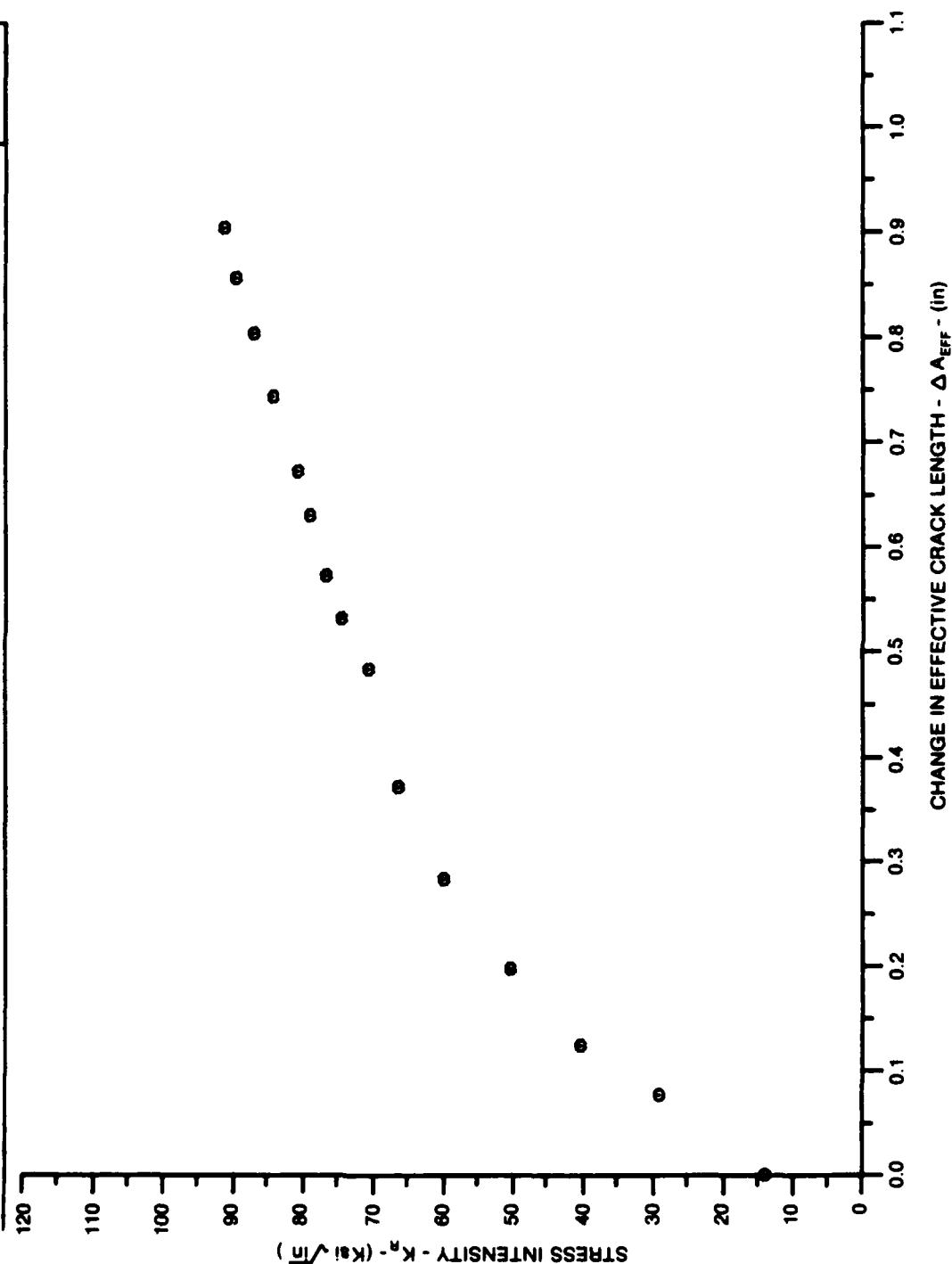


Figure 7.8.2.4

ALUM.  
ALLOY

2124

SPECIMEN THK: .188"  
 SPECIMEN WIDTH: 6.007"  
 $K_C$  (KSI $\sqrt{in}$ ): 82.2  
 REFERENCE: G0011

CONDITION: T651  
 FORM: 5.00" TH PLATE  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T

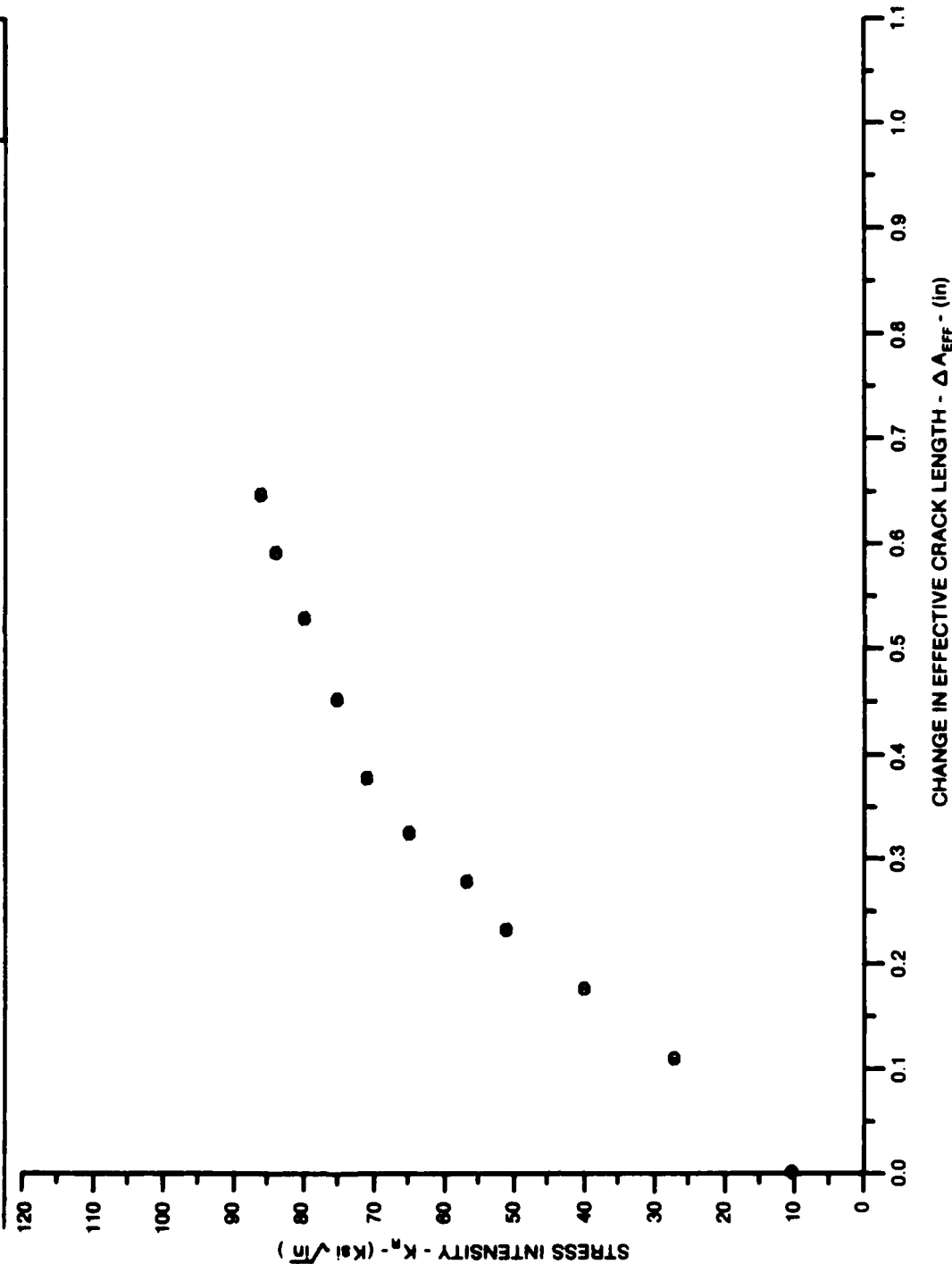


Figure 7.8.2.5

ALUM. ALLOY
2124

SPECIMEN THK: .195"  
 SPECIMEN WIDTH: 8.010"  
 $K_I(Ksi\sqrt{in})$ : 73.2  
 REFERENCE: GD011

CONDITION/HT: T851  
 FORM: 5.50" TH PLATE  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T

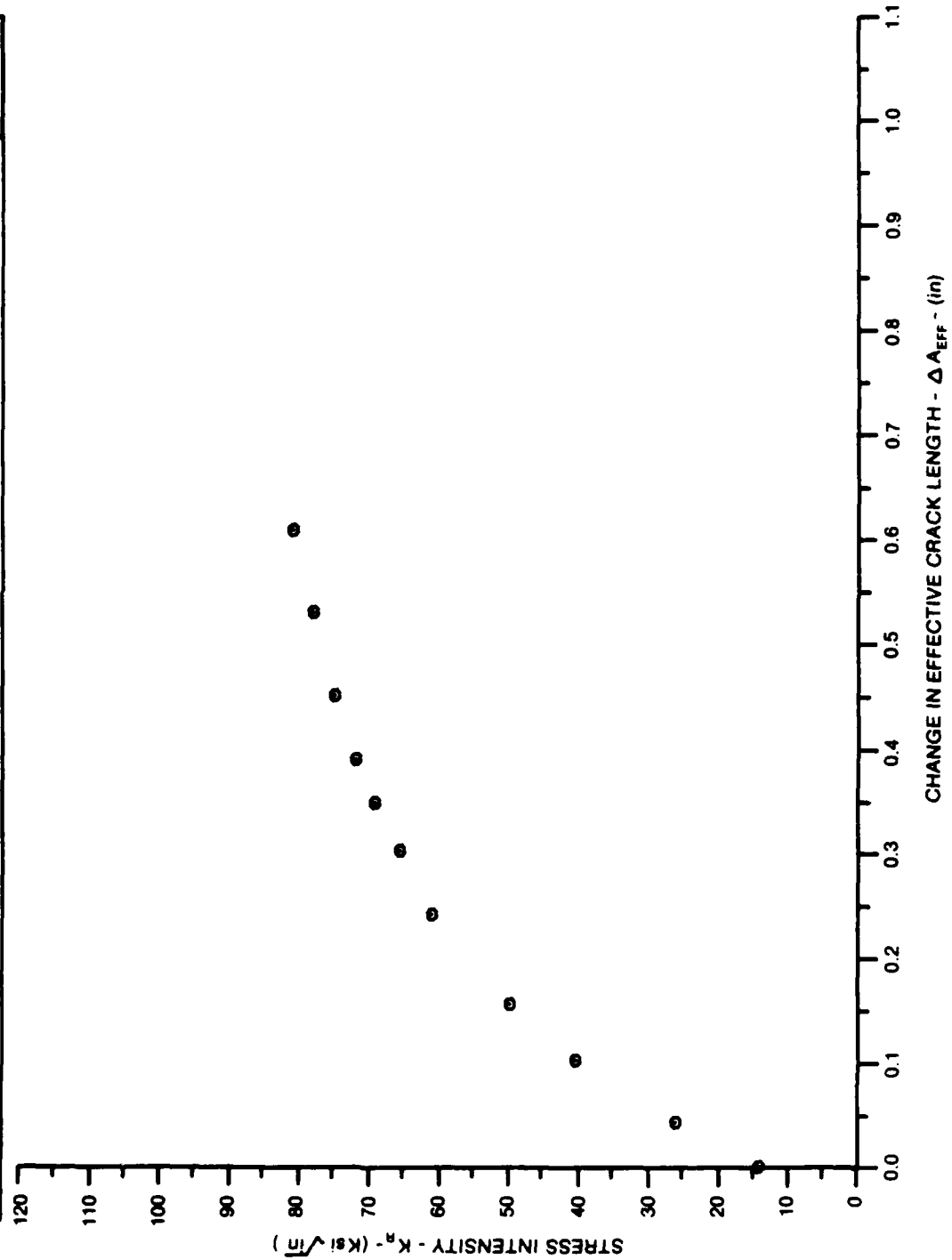


Figure 7.8.2.6

ALUM. ALLOY
2124

SPECIMEN THK: .193"  
 SPECIMEN WIDTH: 6.885"  
 $K_{IC}$  (Ksi $\sqrt{in}$ ): 68.9  
 REFERENCE: G0811

CONDITION/HT: T851  
 FORM: 5.50" TH PLATE  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T

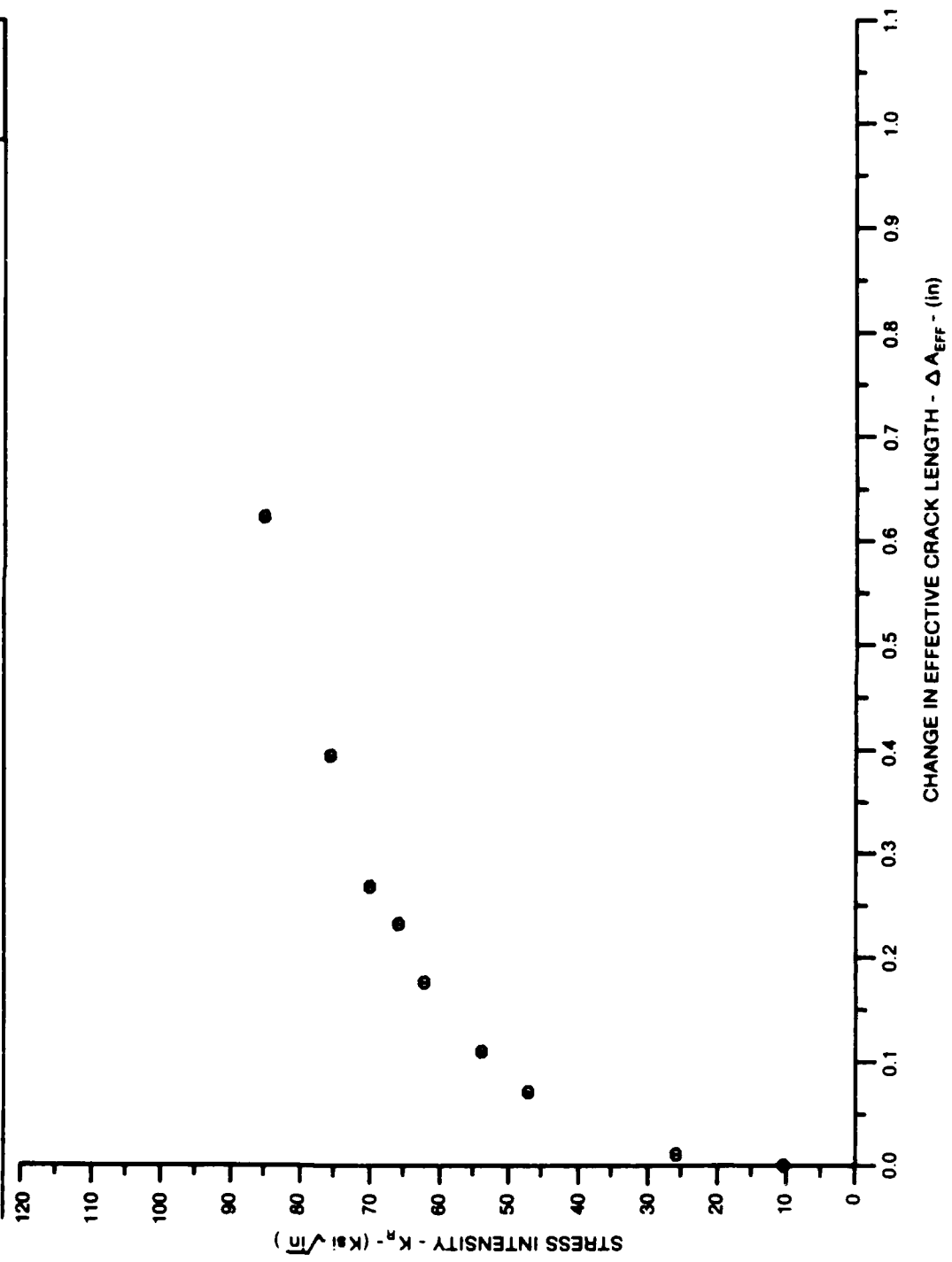


Figure 7.8.2.7

ALUM. ALLOY
2124

SPECIMEN THK: .406"  
 SPECIMEN WIDTH: 6.003"  
 $K_{IC}$  (ksi√in): 70.5  
 REFERENCE: GD811

CONDITION/HT: T851  
 FORM: 5.00" TH PLATE  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T

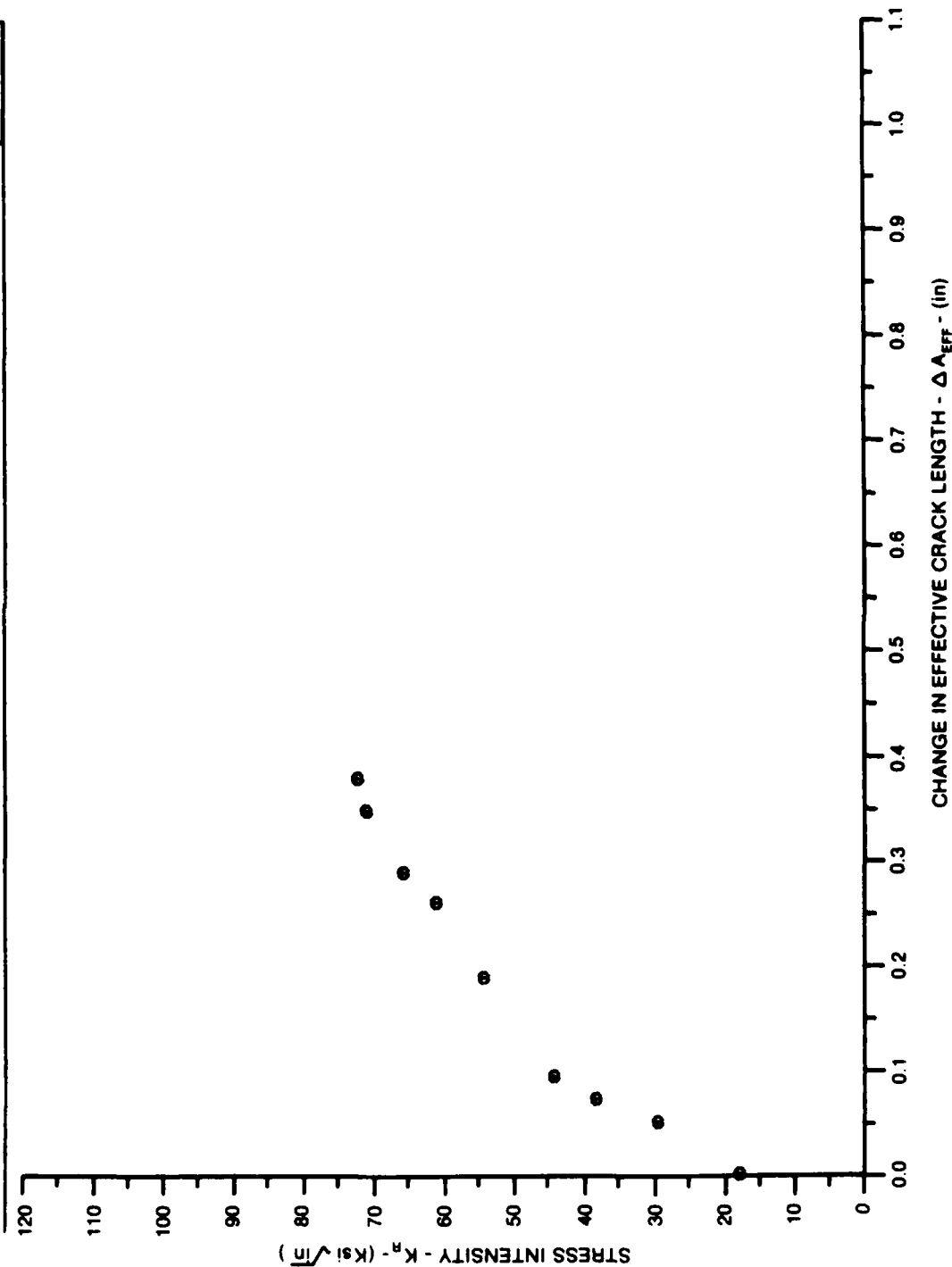


Figure 7.8.2.8

ALUM. ALLOY
2124

SPECIMEN THK: .402"  
 SPECIMEN WIDTH: 8.025"  
 K<sub>IC</sub> (KSI√in): 76.0  
 REFERENCE: GD011

CONDITION/HT: T851  
 FORM: 5.50" TH PLATE  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T

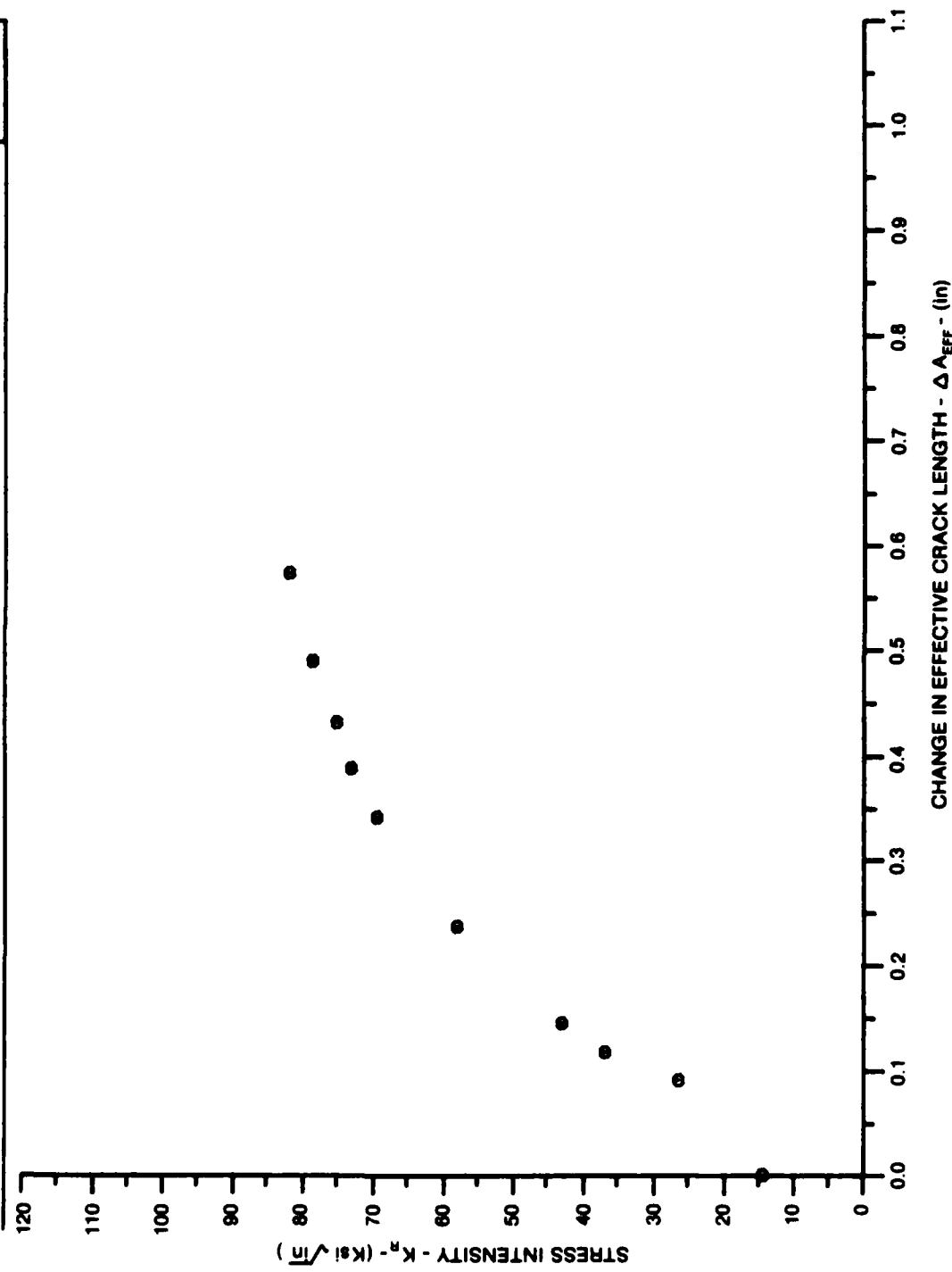


Figure 7.8.2.9



ALUM. ALLOY
2124

SPECIMEN THK: .482"  
 SPECIMEN WIDTH: 6.828"  
 $K_{IC}$  (KSI $\sqrt{in}$ ): 73.1  
 REFERENCE: GD011

CONDITION/HT: T651  
 FORM: 5.58" TH PLATE  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T

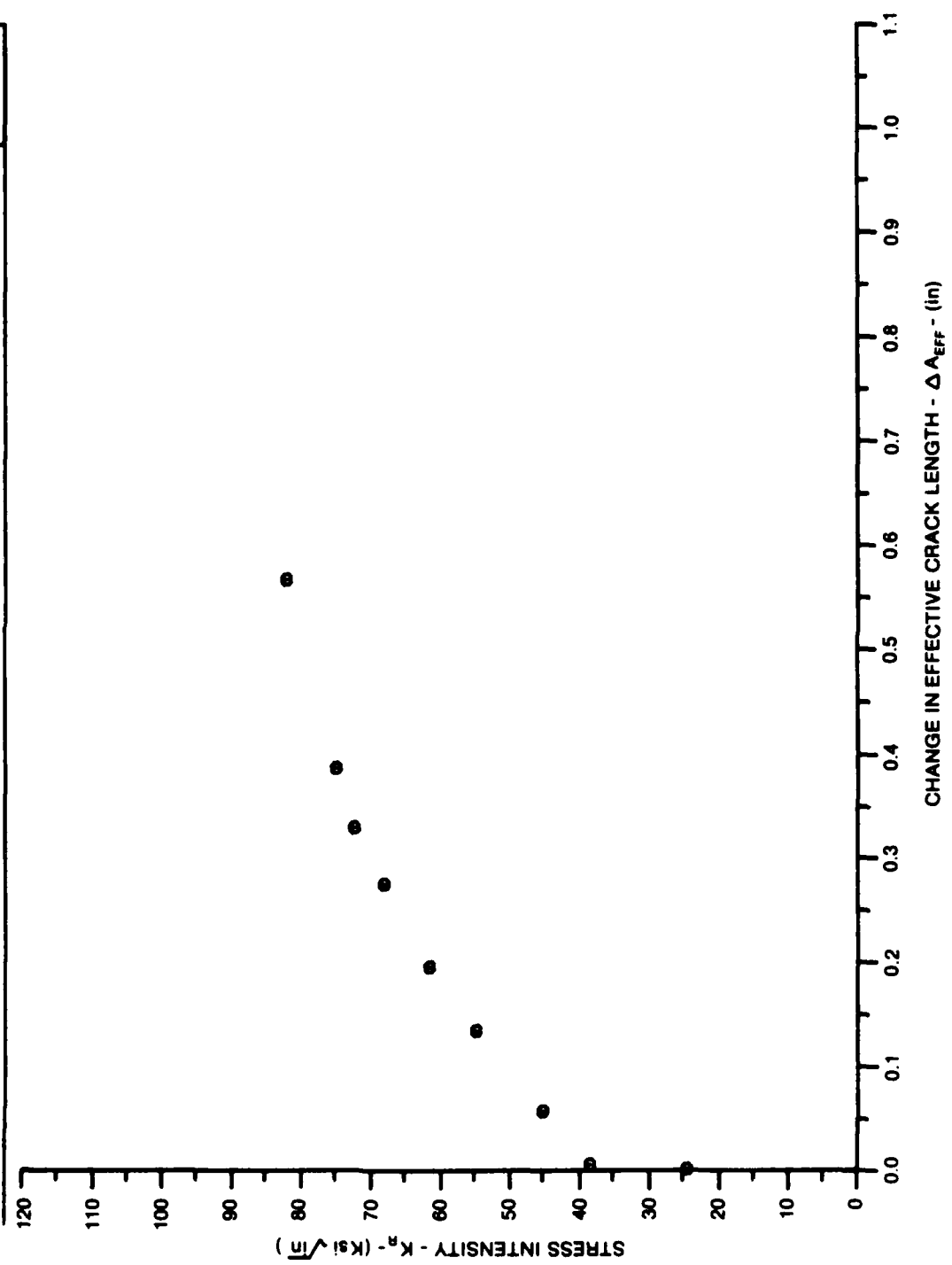


Figure 7.8.2.10

ALUM.  
ALLOY

2124

SPECIMEN THK: .191"  
SPECIMEN WIDTH: 5.800"  
 $K_{IC}$  (ksi $\sqrt{in}$ ): 53.8  
REFERENCE: GD011

CONDITION/HT: T851  
FORM: 5.00" TH PLATE  
SPECIMEN TYPE: CCP  
ORIENTATION: T-L

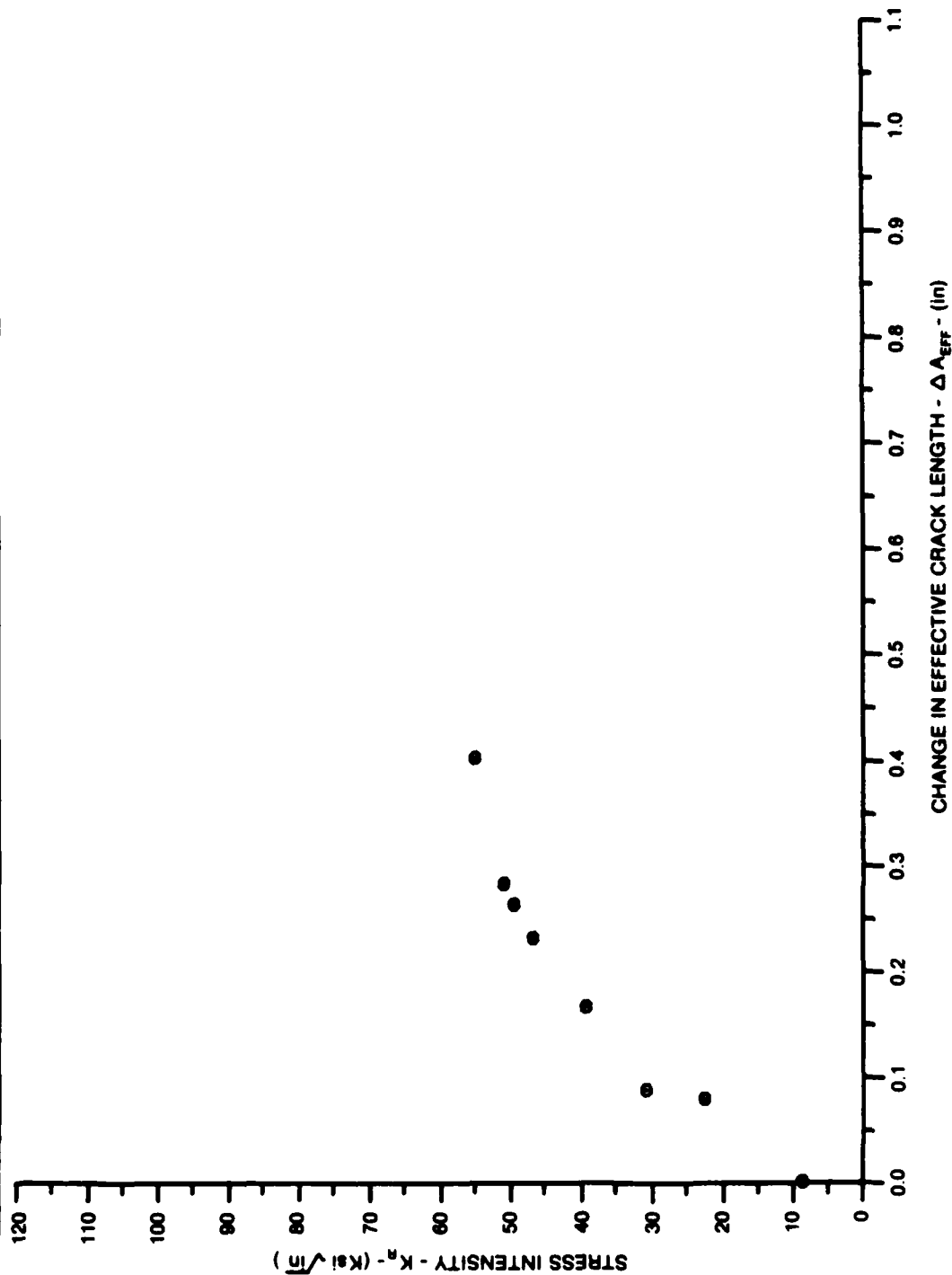


Figure 7.8.2.11

ALUM. ALLOY
2124

SPECIMEN THK: .283"  
 SPECIMEN WIDTH: 5.825"  
 $K_{IC}$  (Ksi $\sqrt{in}$ ): 49.0  
 REFERENCE: GD811

CONDITION/HT: T851  
 FORM: 5.00" TH PLATE  
 SPECIMEN TYPE: CCP  
 ORIENTATION: T-L

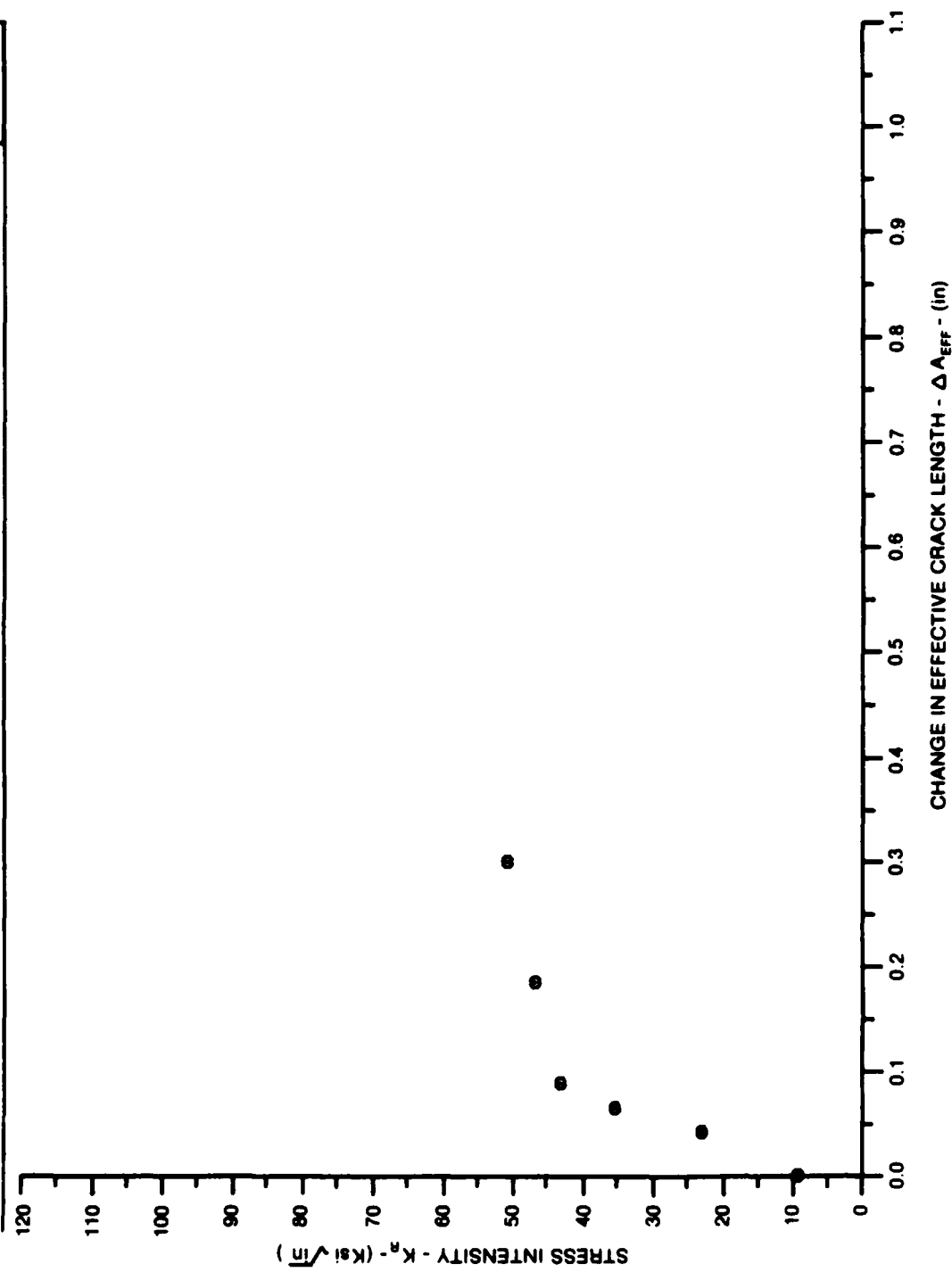


Figure 7.8.2.12

TABLE 7.8.3.1

**FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR**

**DATA ASSOCIATED WITH FIGURE 7.8.3.1 INDICATING EFFECT  
OF STRESS RATIO**

MATERIAL: ALUMINUM 2124  
CONDITION: T851  
ENVIRONMENT: R. T. , H. H. A.

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		R=+0.33			
DELTA K	A: 2.11	.00883			
MIN	B:				
	C:				
	D:				
	2.50	.0441			
	3.00	.149			
	3.50	.317			
	4.00	.549			
	5.00	1.33			
	6.00	2.60			
	7.00	4.24			
	8.00	6.22			
	9.00	8.61			
	10.00	11.5			
	13.00	24.4			
	16.00	49.6			
	20.00	168.			
DELTA K	A: 20.19	182.			
MAX	B:				
	C:				
	D:				

ROOT MEAN SQUARE 12.91  
PERCENT ERROR

LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25  
SUMMARY 1.25-2.0  
(NP/NA) >2.0

CONDITION/HT: T851  
 FORM: 1.50" TH PLATE  
 SPECIMEN TYPE: WDL  
 ORIENTATION: L-T  
 FREQUENCY: 25.00  
 ENVIRONMENT: R. T., H. H. A.

YIELD STRENGTH: 66.0 KSI  
 ULT. STRENGTH: 71.0 KSI  
 SPECIMEN THK: 0.250"  
 SPECIMEN WIDTH: 2.550"  
 REFERENCES: NC003

ALUM.  
 ALLOY

2124

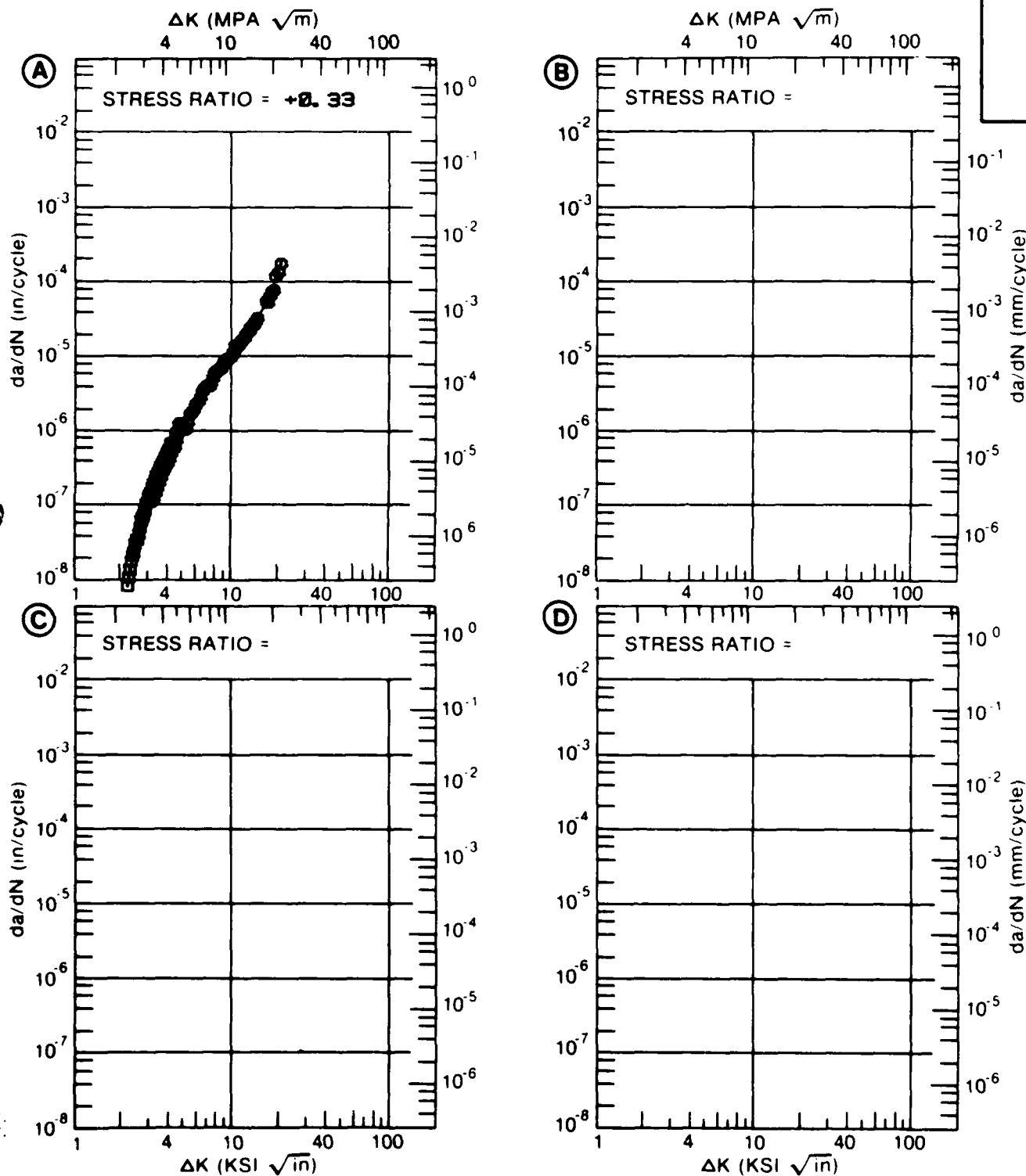


Figure 7.8.3.1

TABLE 7.8.3.2

**FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR**

**DATA ASSOCIATED WITH FIGURE 7.8.3.2 INDICATING EFFECT  
OF ENVIRONMENT**

<b>MATERIAL: ALUMINUM</b>		<b>2124</b>			
<b>CONDITION: T851</b>					
<b>DELTA K</b>		<b>DA/DN (10**-6 IN./CYCLE)</b>			
<b>(KSI*IN**1/2)</b>		<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
		<b>E= R. T.</b>			
		<b>LAB AIR</b>			
<b>DELTA K</b>	<b>A:</b>	<b>2.05</b>	<b>.0155</b>		
	<b>B:</b>				
	<b>C:</b>				
	<b>D:</b>				
		<b>2.50</b>	<b>.0474</b>		
		<b>3.00</b>	<b>.0874</b>		
		<b>3.50</b>	<b>.115</b>		
		<b>4.00</b>	<b>.142</b>		
		<b>5.00</b>	<b>.272</b>		
		<b>6.00</b>	<b>.596</b>		
		<b>7.00</b>	<b>1.11</b>		
		<b>8.00</b>	<b>1.80</b>		
		<b>9.00</b>	<b>2.70</b>		
<b>MIN</b>		<b>10.00</b>	<b>3.84</b>		
		<b>13.00</b>	<b>9.39</b>		
		<b>16.00</b>	<b>20.7</b>		
		<b>20.00</b>	<b>56.7</b>		
<b>DELTA K</b>	<b>A:</b>	<b>22.02</b>	<b>93.8</b>		
	<b>B:</b>				
	<b>C:</b>				
	<b>D:</b>				
<b>ROOT MEAN SQUARE</b>		<b>32.48</b>			
<b>PERCENT ERROR</b>					
<b>LIFE</b>		<b>0.0-0.5</b>			
<b>PREDICTION</b>		<b>0.5-0.8</b>			
<b>RATIO</b>		<b>0.8-1.25</b>			<b>2</b>
<b>SUMMARY</b>		<b>1.25-2.0</b>			
<b>(NP/NA)</b>		<b>&gt;2.0</b>			

CONDITION/HT: T851  
 FORM: 1.50" TH PLATE  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T  
 STRESS RATIO: +0.02  
 FREQUENCY: 1.00- 30.00 HZ

YIELD STRENGTH: 67.2 KSI  
 ULT. STRENGTH: 71.5 KSI  
 SPECIMEN THK: 0.109- 0.111"  
 SPECIMEN WIDTH: 3.950- 3.954"  
 REFERENCES: MA002

ALUM.  
ALLOY

2124

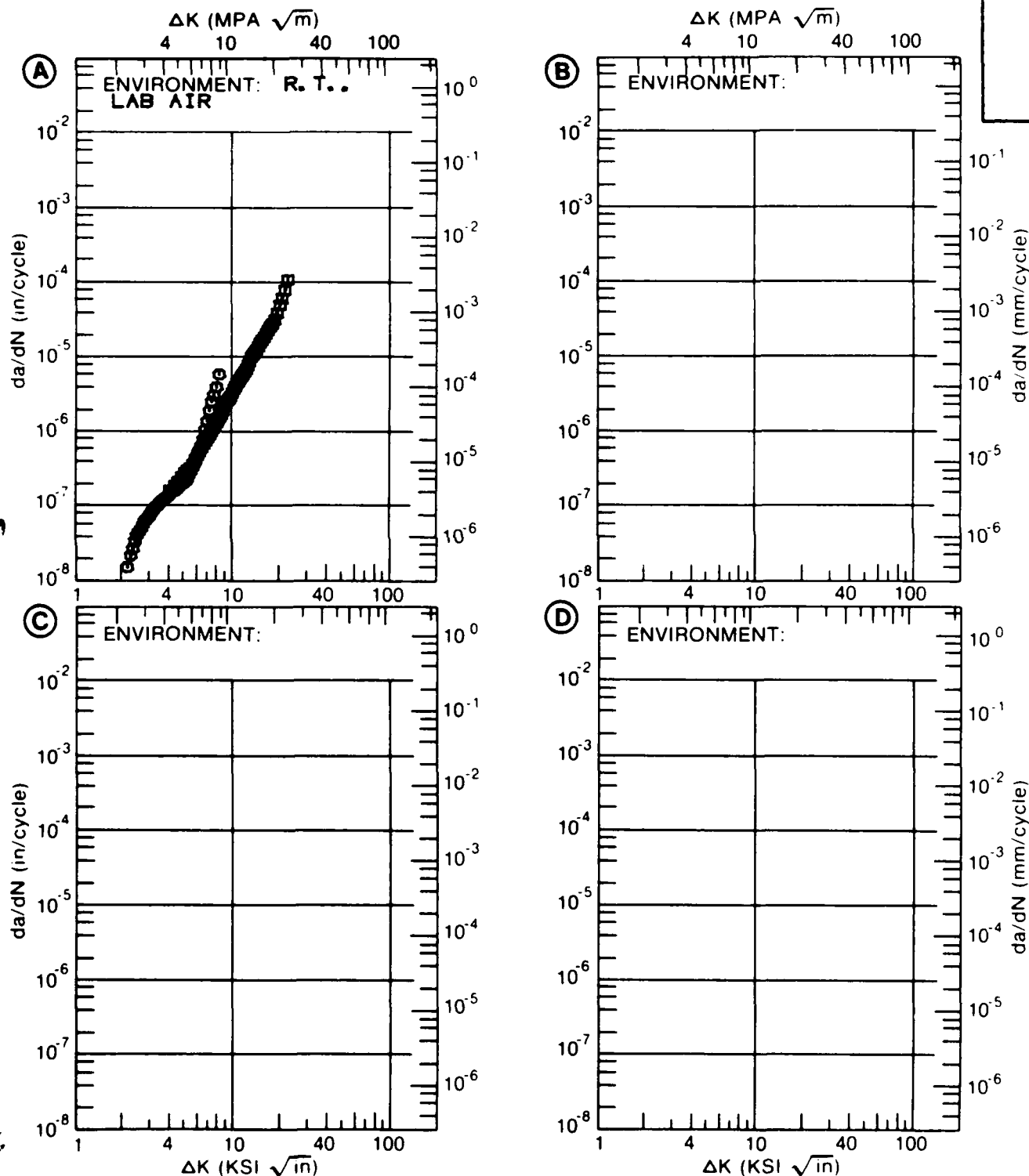


Figure 7.8.3.2

TABLE 7.8.3.3

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.8.3.3 INDICATING EFFECT  
OF STRESS RATIO

MATERIAL: ALUMINUM 2124  
CONDITION: T851  
ENVIRONMENT: R. T., L. H. A.

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		R=+0.10	R=+0.50		
DELTA K	A: 2.42	.0147			
MIN	B: 1.62		.00552		
	C:				
	D:				
	2.00		.0501		
	2.50	.0198	.0925		
	3.00	.0661	.111		
	3.50	.118	.173		
	4.00	.163	.295		
	5.00	.266	.682		
	6.00	.458	1.16		
	7.00	.776	1.78		
	8.00	1.25	2.72		
	9.00	1.89	4.29		
	10.00	2.69	7.07		
	13.00	6.60	34.6		
	16.00	15.1	83.9		
	20.00	44.6			
	25.00	133.			
DELTA K	A: 26.67	174.			
MAX	B: 16.28		86.4		
	C:				
	D:				
ROOT MEAN SQUARE		27.50	30.69		
PERCENT ERROR					

LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25  
SUMMARY 1.25-2.0  
(NP/NA) >2.0



CONDITION/HT: T851  
 FORM: 2.00" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 FREQUENCY: 30.00  
 ENVIRONMENT: R. T., L. H. A.

YIELD STRENGTH: 86.4 KSI  
 ULT. STRENGTH: 72.1 KSI  
 SPECIMEN THK: 0.375- 1.500"  
 SPECIMEN WIDTH: 2.550"  
 REFERENCES: UD005

ALUM.  
 ALLOY

2124

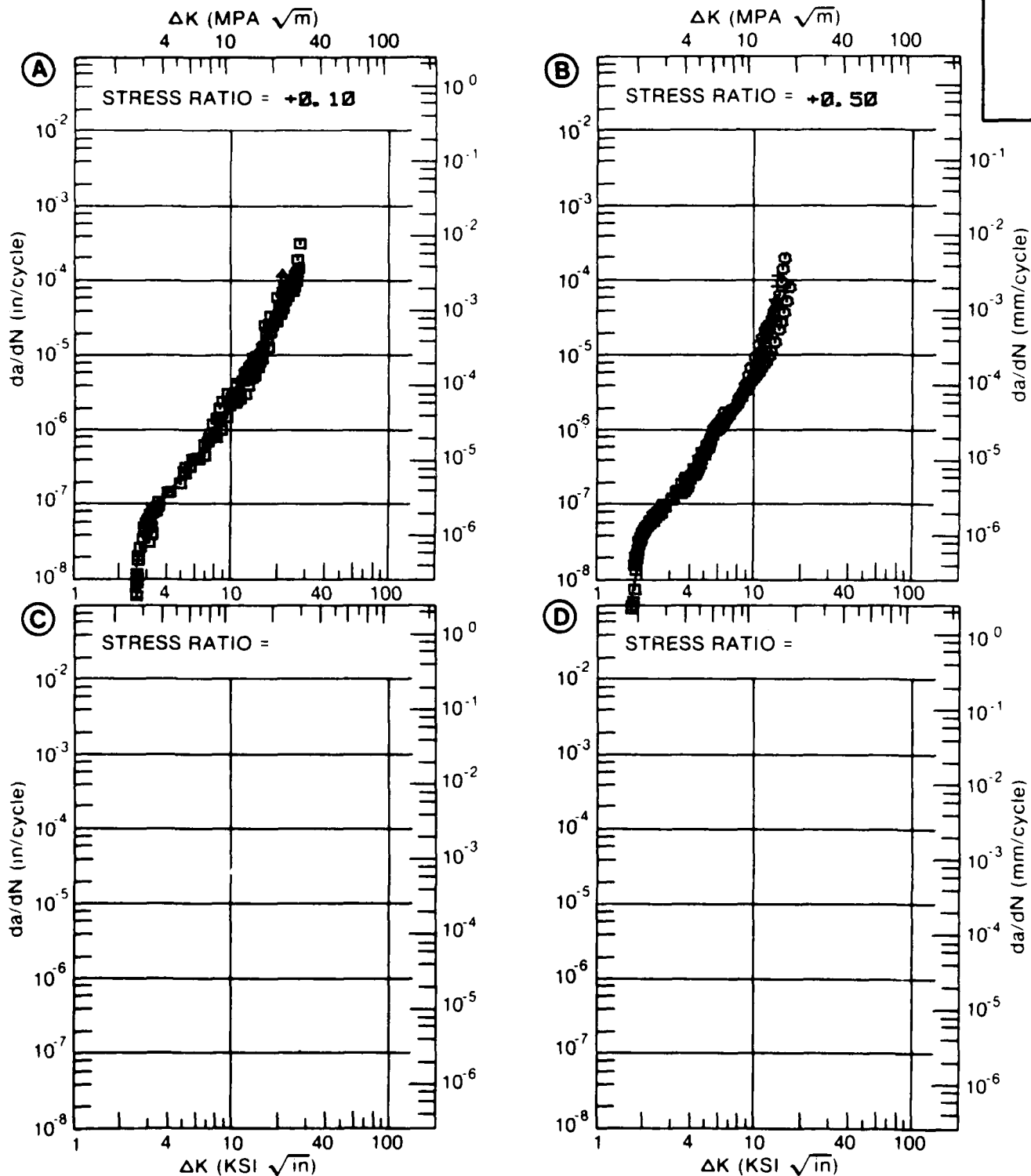


Figure 7.8.3.3

TABLE 7.8.3.4

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.8.3.4 INDICATING EFFECT  
OF ENVIRONMENT

MATERIAL: ALUMINUM		2124			
CONDITION: T851					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R. T. DRY AIR	E= R. T. SALT FOG		
A:	5.61	2.56			
DELTA K B:	7.00		6.99		
MIN C:					
D:					
	6.00	2.70			
	7.00	3.82	6.99		
	8.00	4.16	7.73		
	9.00	5.28	11.3		
	10.00	8.77	16.9		
	13.00	60.3	32.7		
A:	13.38	67.7			
DELTA K B:	13.38		42.7		
MAX C:					
D:					
ROOT MEAN SQUARE		13.83	6.22		
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25	1	1		
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION/HT: T851  
 FORM: 4.50" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: S-L  
 STRESS RATIO: +0.33  
 FREQUENCY: 18.30

YIELD STRENGTH: 57.3 KSI  
 ULT. STRENGTH: 64.1 KSI  
 SPECIMEN THK: 1.489-1.491"  
 SPECIMEN WIDTH: 3.800"  
 REFERENCES: 86842

ALUM.  
 ALLOY

2124

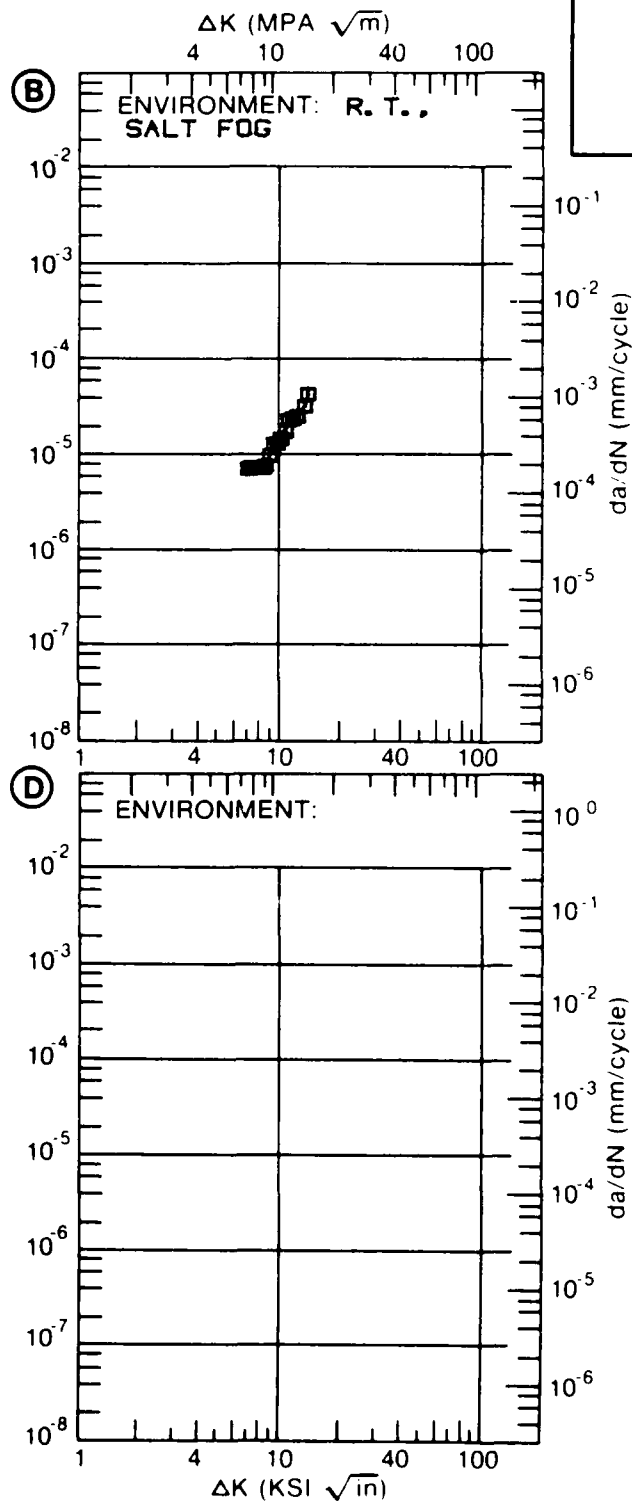
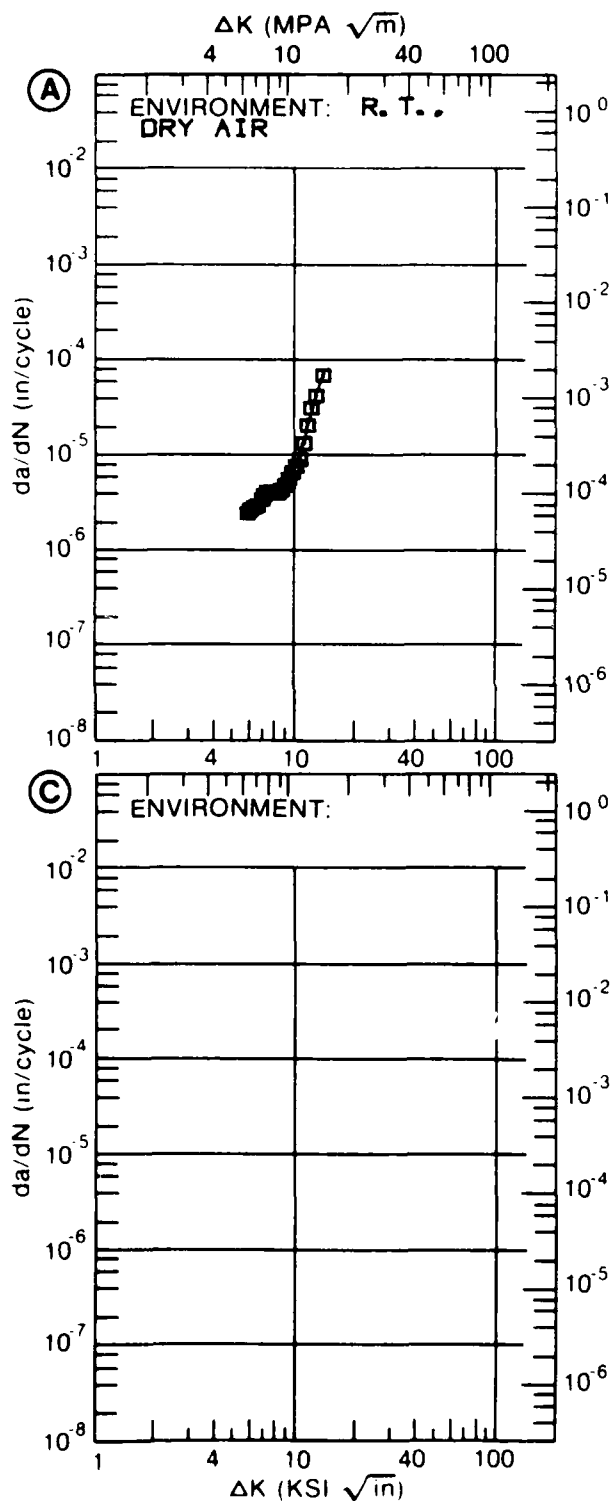


Figure 7.8.3.4

TABLE 7.8.3.5

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.8.3.5 INDICATING EFFECT

OF STRESS RATIO

MATERIAL: ALUMINUM		2124			
CONDITION: T851					
ENVIRONMENT: R. T., S. T. W.					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		R=+0. 10	R=+0. 30	R=+0. 50	
A:	4. 36	. 105			
DELTA K B:	3. 34		. 135		
MIN C:	3. 24			. 199	
D:					
	3. 50		. 143	. 267	
	4. 00		. 219	. 427	
	5. 00	. 265	. 646	1. 07	
	6. 00	. 458	1. 45	2. 27	
	7. 00	1. 16	2. 63	3. 64	
	8. 00	2. 48	4. 17	5. 16	
	9. 00	4. 15	6. 08	7. 02	
	10. 00	6. 04	8. 37	9. 52	
	13. 00	12. 6	17. 9	27. 1	
	16. 00	22. 2	33. 5		
	20. 00	50. 4	119.		
	25. 00	176.			
A:	28. 12	436.			
DELTA K B:	20. 62		160.		
MAX C:	14. 78			90. 4	
D:					
ROOT MEAN SQUARE		25. 63	14. 28	14. 02	
PERCENT ERROR					
LIFE	0. 0-0. 5				
PREDICTION	0. 5-0. 8				
RATIO	0. 8-1. 25				
SUMMARY	1. 25-2. 0	1	2	2	
(NP/NA)	>2. 0	1			

CONDITION/HT: T851  
 FORM: 5.50" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 FREQUENCY: 1.00  
 ENVIRONMENT: R. T., S. T. W.

YIELD STRENGTH: 62.6 KSI  
 ULT. STRENGTH: 89.4 KSI  
 SPECIMEN THK: 0.744- 0.750"  
 SPECIMEN WIDTH: 5.000"  
 REFERENCES: GD003

ALUM.  
 ALLOY

2124

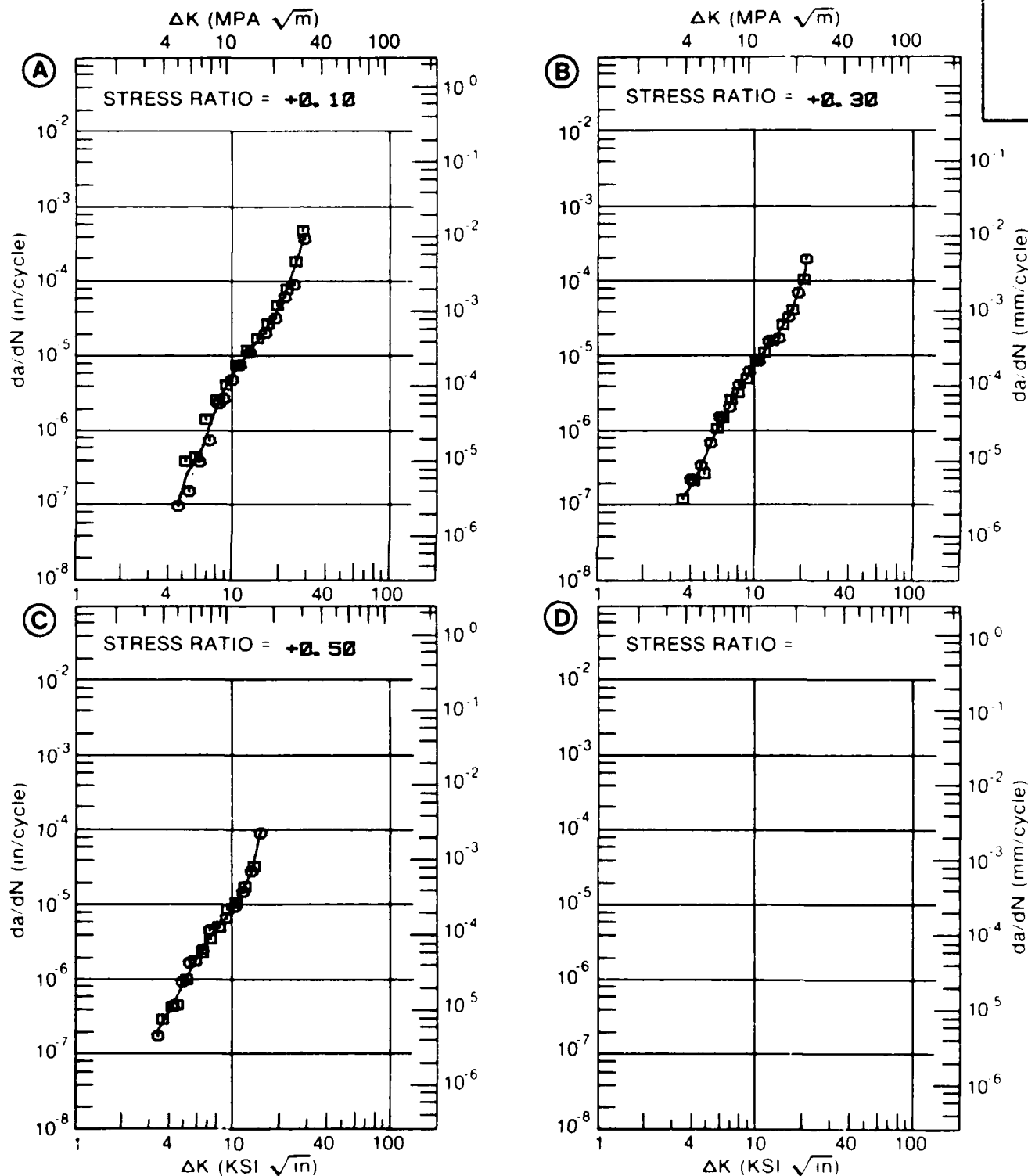


Figure 7.8.3.5

TABLE 7.8.3.6

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.8.3.6 INDICATING EFFECT  
OF STRESS RATIO

MATERIAL: ALUMINUM 2124  
CONDITION: T851  
ENVIRONMENT: R. T. , H. H. A.

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		R=+0.07			
DELTA K MIN	A:	2.71	.0317		
	B:				
	C:				
	D:				
3.00		.0952			
DELTA K MAX	A:	3.12	.0627		
	B:				
	C:				
	D:				

ROOT MEAN SQUARE 38.48  
PERCENT ERROR

LIFE	0.0-0.5	1
PREDICTION	0.5-0.8	1
RATIO	0.8-1.25	2
SUMMARY	1 25-2.0	
(NP/NA)	>2.0	

CONDITION/HT: T851  
 FORM: 5.50" TH PLATE  
 SPECIMEN TYPE: CCP  
 ORIENTATION: T-L  
 FREQUENCY:  
 ENVIRONMENT: R. T., H. H. A.

YIELD STRENGTH: 57.0 KSI  
 ULT. STRENGTH:  
 SPECIMEN THK: 0.500"  
 SPECIMEN WIDTH: 6.000"  
 REFERENCES: BL002

ALUM.  
 ALLOY

2124

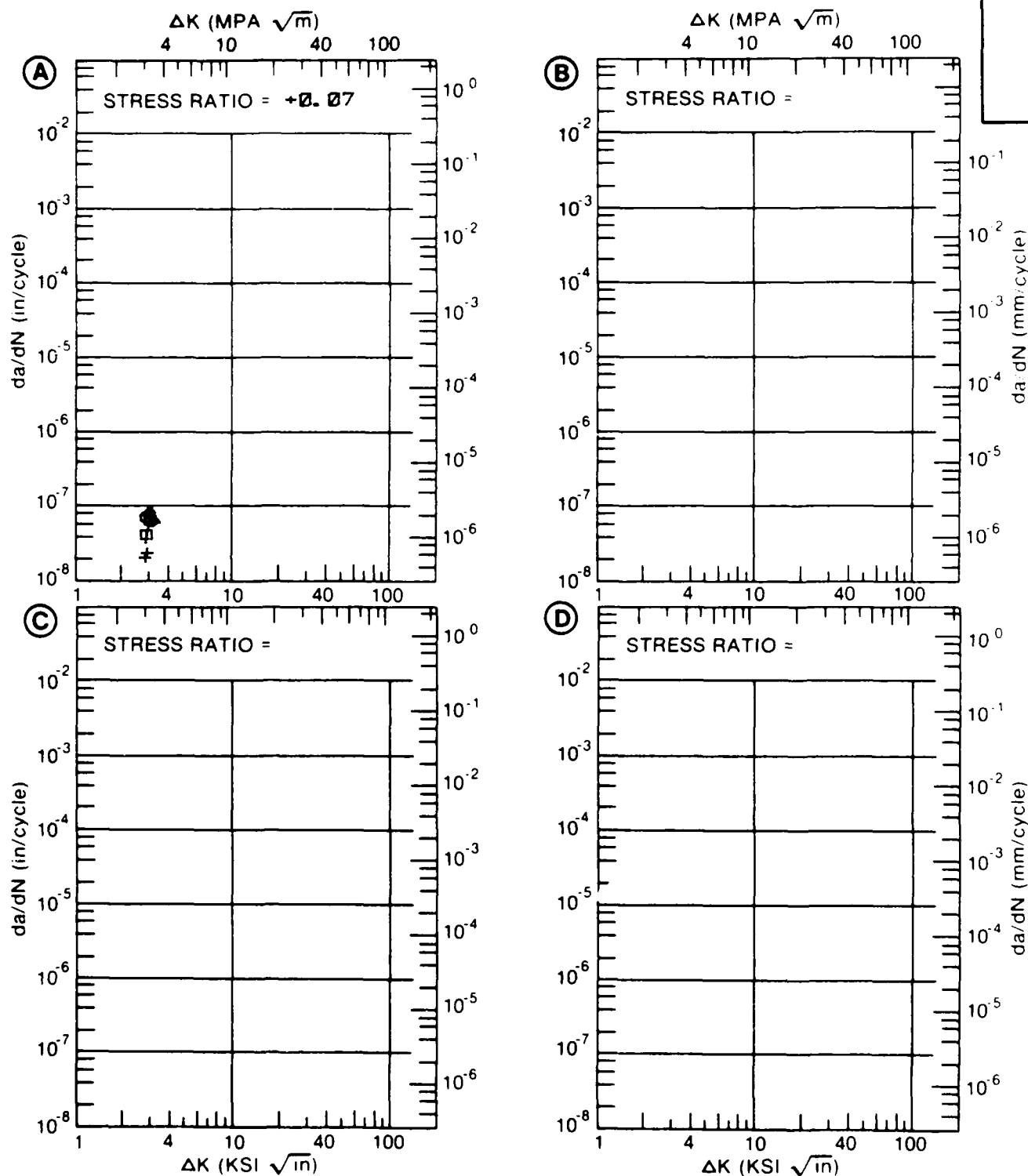


Figure 7.8.3.6

TABLE 7.8.3.7

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.8.3.7 INDICATING EFFECT  
OF STRESS RATIO

MATERIAL: ALUMINUM 2124  
CONDITION: T851  
ENVIRONMENT: R. T. , H. H. A.

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		R=+0. 10	R=+0. 25	R=+0. 50	
DELTA K MIN	A: 3. 20	. 050			
	B: 2. 03		. 007		
	C: 1. 79			. 045	
	D: 8				
	2. 00			. 0664	
	2. 50		. 0341	. 133	
	3. 00		. 0986	. 230	
	3. 50	. 0646	. 206	. 365	
	4. 00	. 105	. 353	. 553	
	5. 00	. 287	. 751	1. 17	
	6. 00	. 698	1. 29	2. 33	
	7. 00	1. 43	1. 99	4. 49	
	8. 00	2. 48	2. 95	8. 47	
	9. 00	3. 73	4. 27	15. 7	
	10. 00	5. 16	6. 15	28. 8	
	13. 00	12. 1	18. 5		
	16. 00	31. 1	58. 3		
DELTA K MAX	A: 16. 24	33. 8			
	B: 17. 43		102.		
	C: 12. 09			98. 9	
	D:				
ROOT MEAN SQUARE		35. 59	22. 28	17. 25	
PERCENT ERROR					
LIFE	0. 0-0. 5		1		
PREDICTION	0. 5-0. 8	1			
RATIO	0. 8-1. 25	6	3	5	
SUMMARY	1. 25-2. 0	5	4	3	
(NP/NA)	>2. 0		1	3	



CONDITION/HT: T851  
 FORM: 5.50" TH PLATE  
 SPECIMEN TYPE: CCP  
 ORIENTATION: T-L  
 FREQUENCY: 6.00- 33.00 HZ  
 ENVIRONMENT: R. T., H. H. A.

YIELD STRENGTH: 63.2- 67.2 KSI  
 ULT. STRENGTH:  
 SPECIMEN THK: 0.500"  
 SPECIMEN WIDTH: 4.000- 6.000"  
 REFERENCES: BL002

ALUM.  
ALLOY

2124

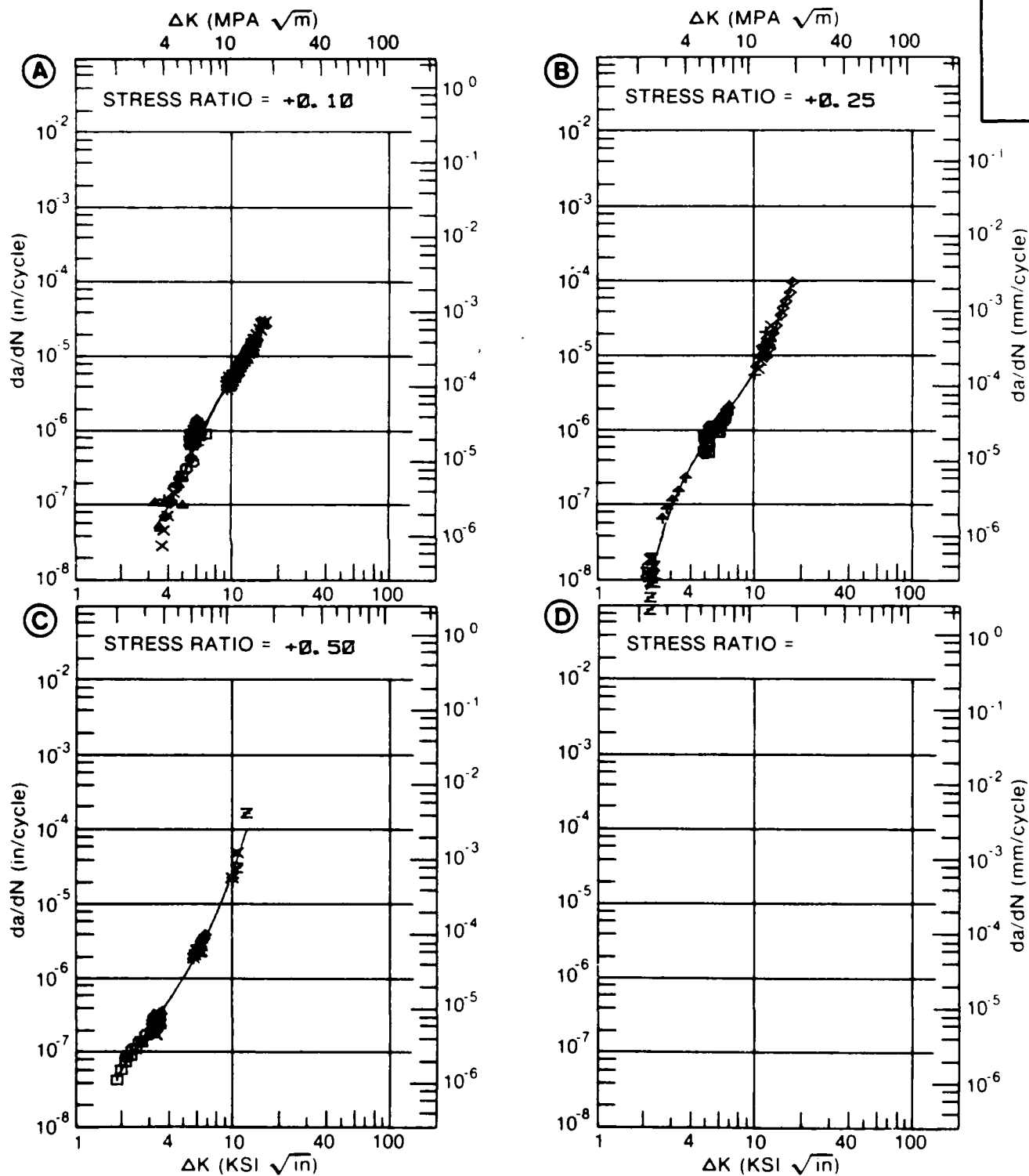


Figure 7.8.3.7

TABLE 7.8.3.8

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.8.3.8 INDICATING EFFECT

OF STRESS RATIO

MATERIAL: ALUMINUM 2124  
CONDITION: T851  
ENVIRONMENT: R. T. , H. H. A.

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		R=+0. 10	R=+0. 50		
DELTA K	A: 4.28	.133			
MIN	B: 2.71		.0917		
	C:				
	D:				
	3.00		.150		
	3.50		.302		
	4.00		.527		
	5.00	.239	1.22		
	6.00	.567	2.27		
	7.00	1.19	3.73		
	8.00	2.18	5.87		
	9.00	3.60	9.23		
	10.00	5.53	15.4		
	13.00	15.0			
	16.00	32.0			
	20.00	92.9			
DELTA K	A: 23.19	473.			
MAX	B: 12.38		82.1		
	C:				
	D:				
ROOT MEAN SQUARE		17.19	10.35		
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25		1		
SUMMARY	1.25-2.0	1			
(NP/NA)	>2.0				

CONDITION/HT: T851  
 FORM: 5.50" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: T-L  
 FREQUENCY: 1.00  
 ENVIRONMENT: R. T., H. H. A.

YIELD STRENGTH: 61.9 KSI  
 ULT. STRENGTH: 89.0 KSI  
 SPECIMEN THK: 0.750- 0.751"  
 SPECIMEN WIDTH: 5.000"  
 REFERENCES: GD003

ALUM.  
 ALLOY

2124

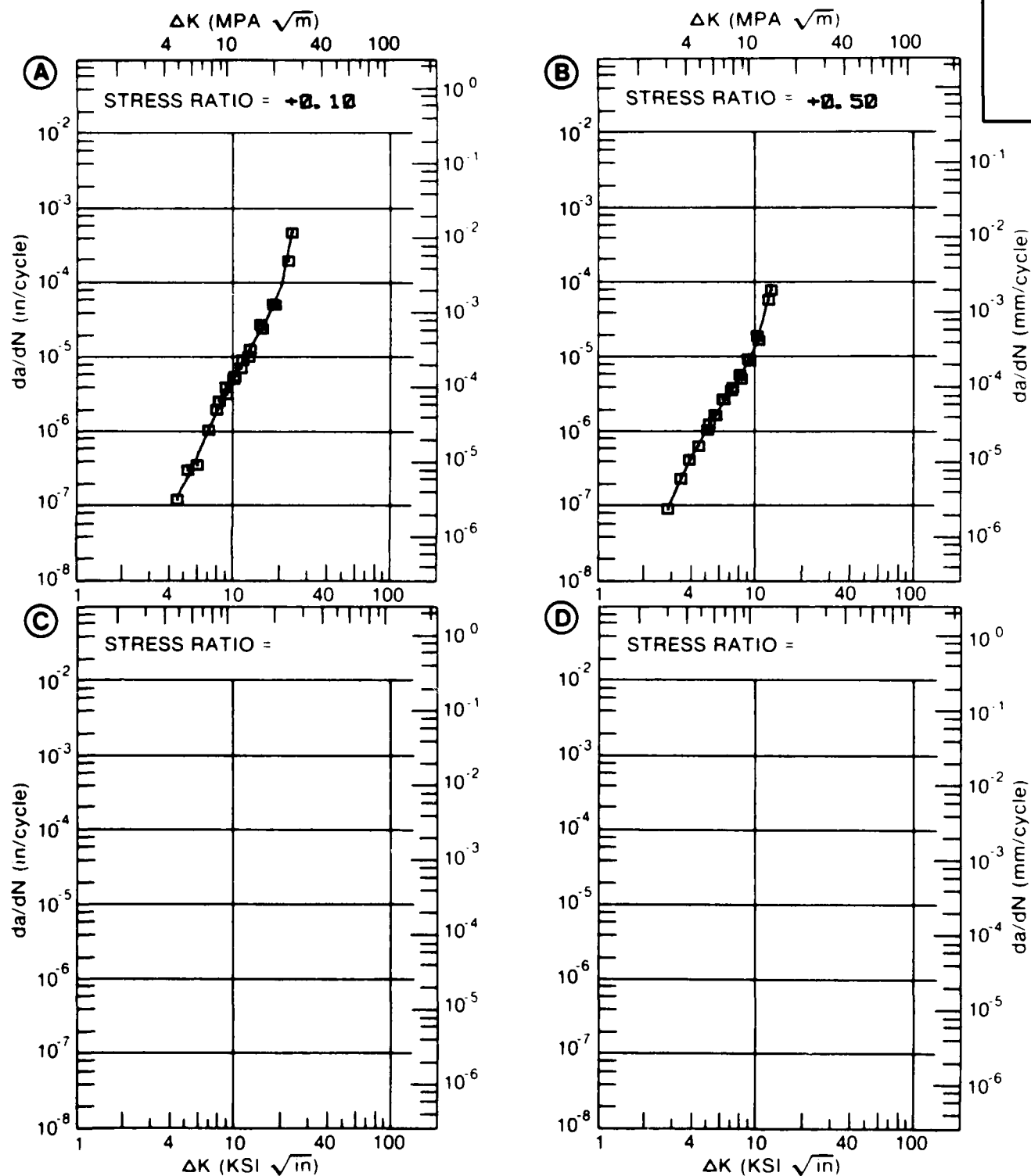


Figure 7.8.3.8

TABLE 7.8.3.9

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.8.3.9 INDICATING EFFECT  
OF STRESS RATIO

MATERIAL: ALUMINUM		2124			
CONDITION: T851					
ENVIRONMENT: R. T., S. T. W.					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		R=+0. 10	R=+0. 30	R=+0. 50	
DELTA K A:	4. 18	. 240			
DELTA K B:	3. 55		. 214		
MIN C:	2. 71			. 157	
D:					
	3. 00			. 184	
	3. 50			. 278	
	4. 00		. 312	. 443	
	5. 00	. 372	. 595	1. 08	
	6. 00	. 687	1. 39	2. 32	
	7. 00	1. 66	2. 98	4. 41	
	8. 00	3. 47	4. 94	7. 62	
	9. 00	5. 55	7. 18	12. 2	
	10. 00	7. 71	9. 97	18. 5	
	13. 00	16. 2	29. 2		
	16. 00	38. 8			
DELTA K A:	19. 20	140.			
DELTA K B:	15. 42		75. 8		
MAX C:	12. 15			80. 0	
D:					
ROOT MEAN SQUARE		22. 48	12. 07	12. 52	
PERCENT ERROR					
LIFE	0. 0-0. 5				
PREDICTION	0. 5-0. 8				
RATIO	0. 8-1. 25				
SUMMARY	1. 25-2. 0	2	2	2	
(NP/NA)	>2. 0				

CONDITION/HT: T851  
 FORM: 5.50" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: T-L  
 FREQUENCY: 1.00  
 ENVIRONMENT: R. T., S. T. W.

YIELD STRENGTH: 61.9 KSI  
 ULT. STRENGTH: 69.0 KSI  
 SPECIMEN THK: 0.748- 0.752"  
 SPECIMEN WIDTH: 5.000"  
 REFERENCES: G0003

ALUM.  
 ALLOY

2124

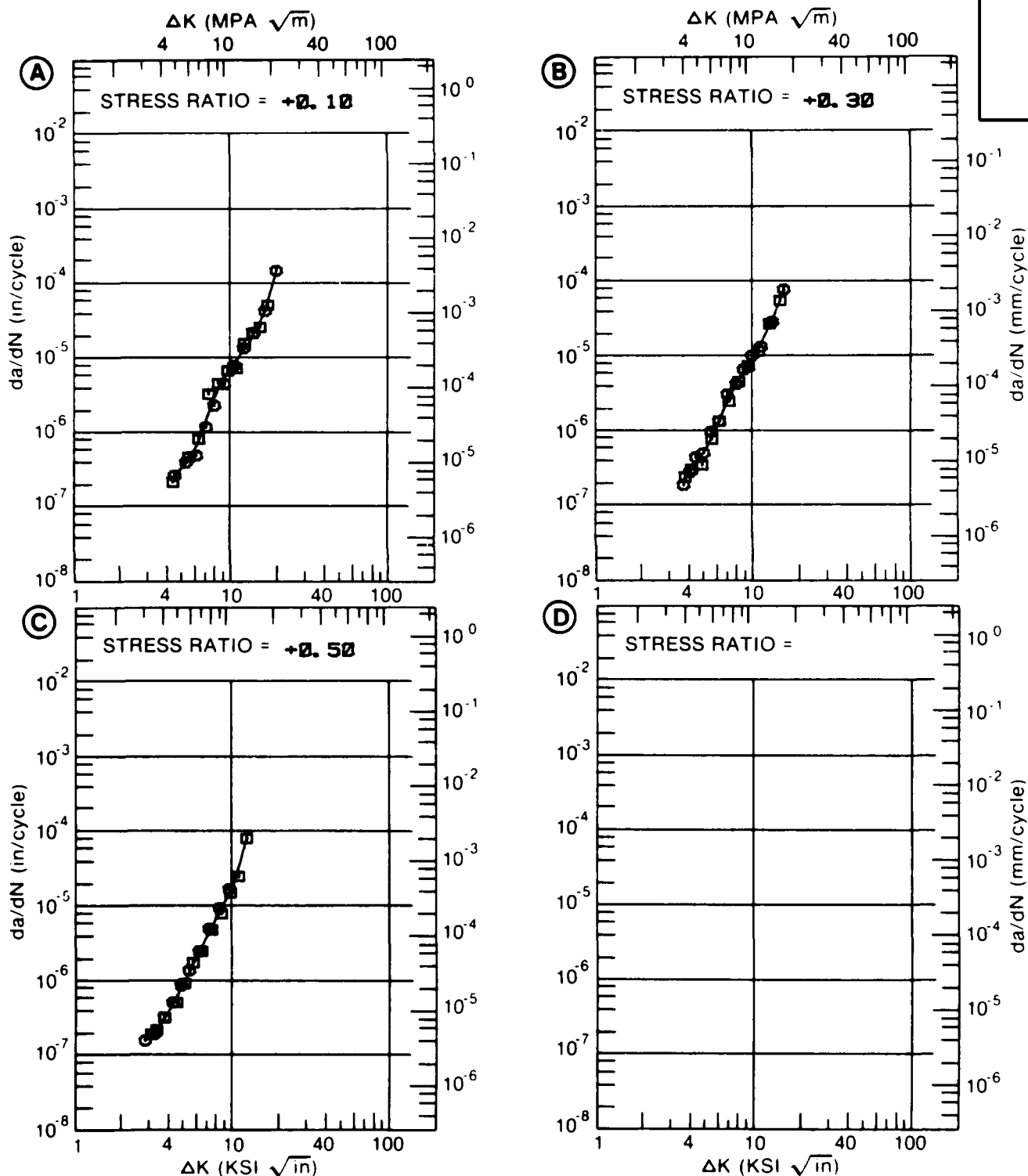


Figure 7.8.3.9

TABLE 7.8.3.10

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.8.3.10 INDICATING EFFECT  
OF STRESS RATIO

MATERIAL: ALUMINUM		2124			
CONDITION: TB51					
ENVIRONMENT: R. T. , S. T. W.					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		R=+0. 10	R=+0. 30	R=+0. 50	
A:	4. 52	. 285			
DELTA K B:	3. 72		. 392		
MIN C:	2. 67			. 198	
D:					
	3. 00			. 217	
	3. 50			. 336	
	4. 00		. 480	. 568	
	5. 00	. 444	. 949	1. 35	
	6. 00	. 962	1. 76	2. 60	
	7. 00	1. 81	3. 07	4. 48	
	8. 00	3. 10	5. 10	7. 21	
	9. 00	4. 96	8. 10	11. 4	
	10. 00	7. 59	12. 4	19. 4	
	13. 00	22. 3	36. 8	229.	
	16. 00	55. 1			
	20. 00	156.			
A:	24. 53	443.			
DELTA K B:	14. 61		60. 5		
MAX C:	13. 21			310.	
D:					
ROOT MEAN SQUARE		14. 59	12. 20	20. 50	
PERCENT ERROR					
LIFE	0. 0-0. 5				
PREDICTION	0. 5-0. 8				
RATIO	0. 8-1. 25				
SUMMARY	1. 25-2. 0	2	2	2	
(NP/NA)	>2. 0				

CONDITION/HT: T851  
 FORM: 5.50" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: S-L  
 FREQUENCY: 1.00 HZ  
 ENVIRONMENT: R. T., S. T. W.

YIELD STRENGTH: 59.1 KSI  
 ULT. STRENGTH: 63.1 KSI  
 SPECIMEN THK: 0.495- 0.501"  
 SPECIMEN WIDTH: 3.990- 4.000"  
 REFERENCES: GD003

ALUM.  
 ALLOY

2124

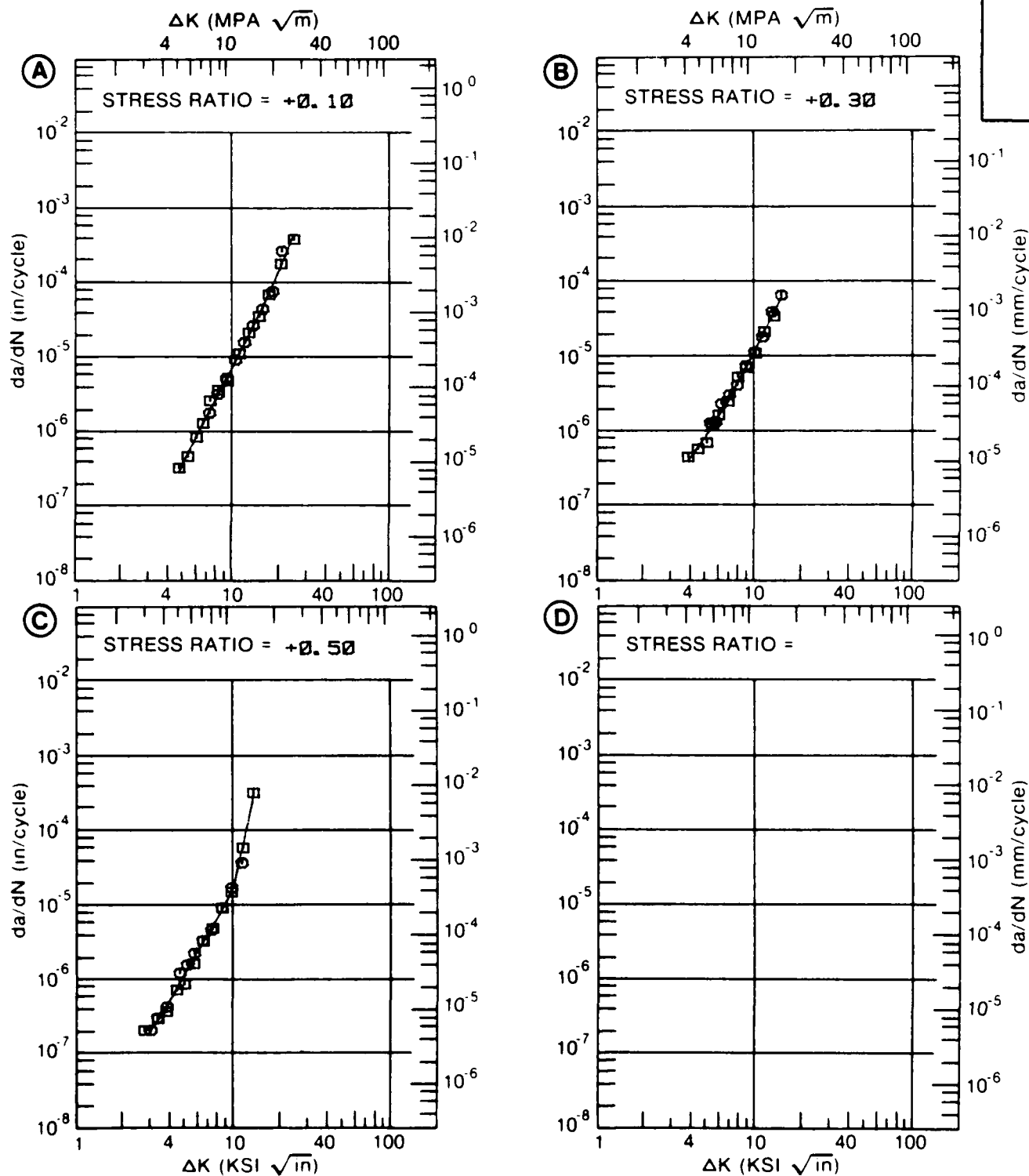


Figure 7.8.3.10





Table 7.9.1.1

MEAN PLANE STRAIN FRACTURE TOUGHNESS DATA OF  
ALUMINUM ALLOY 2214 AT ROOM TEMPERATURE

CONDITION/HT	MEAN KIC ± STANDARD (KCI SORT(IN)) DEVIATION			(NUMBER OF SPECIMENS)	
	PLATE				
	L-L	T-L	S-L		
T651	35.3 ± 2.7 (11)	31.8 ± 0.9 (10)	-----		
T651 (417)	36.0 ± 3.4 (10)	29.4 ± 1.8 (15)	26.6 ± 1.8 (2)		

Table 7.9.2.1

CONDITION	--PRODUCT--			TEST SPECIMEN ORIENT	YIELD STRENGTH (KSI)	ALUMINUM 2214			K(IIC)			K(IIC) STAN	DATE	REFER
	FORM	THICK (IN)	TEMP (F)			THICK (IN)	WIDTH (IN)	DESIGN	CRACK LENGTH (IN)	2.5* (K(IIC)/TYS)**2 (IN)	K(IIC) MEAN (KSI*SQRT IN)			
T651	P	1.75	R.T.	L-T	64.1	2.000	1.002 NB	0.963	0.75	35.10		1973	86213	
		1.75			64.1	2.000	1.002 NB	1.007	0.70	33.90		1973	86213	
		1.75			64.1	2.000	1.001 NB	0.955	0.70	34.00		1973	86213	
		1.75			64.3	2.000	1.002 NB	0.935	0.65	32.60		1973	86213	
		1.75			64.3	2.000	1.002 NB	0.955	0.63	32.40		1973	86213	
		1.75			64.3	2.000	1.002 NB	0.942	0.60	31.90		1973	86213	
		1.50			66.0	3.000	1.500 CT	1.638	0.80	37.30		1973	86213	
		1.50			66.0	3.000	1.500 CT	1.606	0.83	38.00		1973	86213	
		2.37			66.2	4.000	1.999 CT	1.977	0.70	35.00		1973	86213	
		1.50			66.4	3.000	1.499 CT	1.628	0.84	38.90		1973	86213	
T651	P	1.50			66.4	3.000	1.500 CT	1.602	0.90	39.90	35.3/	2.7	1973	86213
		1.75	R.T.	T-L	63.1	2.000	1.002 NB	0.985	0.67	32.70		1973	86213	
		1.75			63.1	2.000	1.001 NB	0.955	0.65	32.20		1973	86213	
		1.75			63.1	2.000	1.001 NB	1.048	0.67	32.60		1973	86213	
		1.75			63.2	2.000	1.001 NB	0.957	0.57	30.50		1973	86213	
		1.75			63.2	2.000	1.002 NB	1.033	0.64	32.00		1973	86213	
		1.75			63.2	2.000	1.001 NB	1.035	0.62	31.40		1973	86213	
		1.50			64.9	3.000	1.500 CT	1.576	0.58	31.20		1973	86213	
		1.50			64.9	3.000	1.499 CT	1.567	0.56	30.60		1973	86213	
		1.50			65.2	3.000	1.500 CT	1.597	0.64	32.90		1973	86213	
T651	P	1.50			65.2	3.000	1.500 CT	1.589	0.60	31.90	31.8/	0.9	1973	86213
		1.50	84	8-L	62.7	1.000	0.500 CT	0.483	0.33	22.90		1973	86213	
		1.50			62.7	1.000	0.500 CT	0.495	0.39	24.90		1973	86213	
		1.50			64.6	0.990	0.500 CT	0.492	0.33	23.30		1973	86213	
		1.50			64.6	1.000	0.500 CT	0.485	0.37	25.00	24.0/	1.1	1973	86213
T651 (417)	P	2.00	R.T.	L-T	63.9	3.000	1.500 CT	1.560	0.85	37.20		1973	86213	
		2.00			63.9	3.000	1.500 CT	1.586	0.89	38.20		1973	86213	
		3.00			64.8	3.000	1.500 CT	1.584	0.79	36.90		1973	86213	
		1.75			64.9	3.000	1.501 CT	1.533	1.15	44.10		1973	86213	
		2.37			66.2	4.000	1.998 CT	2.046	0.71	35.30		1973	86213	
T651	P	2.25			66.3	4.000	1.998 CT	2.123	0.68	34.70		1973	86213	
		3.93			66.3	3.000	1.500 CT	1.464	0.65	33.80		1973	86213	
		2.25			66.3	4.000	1.998 CT	2.021	0.67	34.40		1973	86213	
T651	P	3.93			66.3	3.000	1.501 CT	1.444	0.60	32.60		1973	86213	

Table 7.9.2.1 (Con't)

CONDITION	PRODUCT FORM	THICK (IN)	TEST TEMP (F)	SPECIMEN ORIENT	YIELD STRENGTH (KSI)	ALUMINUM 2214		CRACK LENGTH (IN)	2.5* (K(1C)/TYS)**2 (IN)	P(1C) (KSI*SQRT IN)	K(1C) MEAN DEV (IN)	STAN DEV	DATE	REFER
						W	THICK (IN)							
T651 (417)	P	2 25	R T	L-T	66.5	4.000	1.998	CT	2.047	0.62	33.00	36.0/	3.4	1973 86213
					62.6	3.000	1.500	CT	1.540	0.49	27.70			1973 86213
					62.6	3.000	1.501	CT	1.549	0.53	28.90			1973 86213
					63.2	3.000	1.501	CT	1.592	0.57	30.10			1973 86213
					63.2	3.000	1.501	CT	1.568	0.55	29.60			1973 86213
					63.6	3.000	1.501	CT	1.598	0.58	30.60			1973 86213
					63.6	3.000	1.491	CT	1.606	0.62	31.60			1973 86213
					64.2	4.010	1.999	CT	2.122	0.47	27.90			1973 86213
					64.2	3.000	1.500	CT	1.623	0.63	32.30			1973 86213
					64.2	4.000	1.999	CT	2.141	0.43	26.60			1973 86213
T651 (417)	P	2 25	R T	T-L	64.2	4.000	1.999	CT	2.126	0.46	27.40			1973 86213
					64.2	4.000	1.998	CT	2.179	0.48	28.00			1973 86213
					64.7	4.000	1.999	CT	2.093	0.48	28.40			1973 86213
					64.7	4.000	1.998	CT	2.150	0.48	28.40			1973 86213
					64.9	3.000	1.501	CT	1.484	0.58	31.30			1973 86213
					64.9	3.000	1.500	CT	1.484	0.60	31.70	29.4/	1.8	1973 86213
					59.8	2.000	1.001	CT	0.962	0.45	25.30			1973 86213
					61.0	3.000	1.500	CT	1.532	0.52	27.90	26.6/	1.8	1973 86213
					59.2	1.000	0.499	CT	0.486	0.41	24.00			1973 86213
					59.2	1.000	0.500	CT	0.486	0.39	23.30			1973 86213
T651 (417)	P	1 50	82	S-L	59.8	1.000	0.500	CT	0.490	0.32	21.30			1973 86213
					59.8	1.000	0.498	CT	0.491	0.32	21.30			1973 86213
					60.0	1.000	0.500	CT	0.479	0.35	22.60			1973 86213
					60.0	1.000	0.501	CT	0.474	0.29	20.50			1973 86213
					60.0	1.000	0.499	CT	0.480	0.34	22.00			1973 86213
					60.0	1.000	0.500	CT	0.490	0.38	23.90			1973 86213
					60.0	1.000	0.501	CT	0.477	0.38	23.40			1973 86213
					60.2	1.000	0.500	CT	0.479	0.39	23.70			1973 86213
					61.1	1.000	0.501	CT	0.475	0.39	24.00			1973 86213
					61.1	1.000	0.499	CT	0.471	0.40	24.50	22.8/	1.3	1973 86213
T651 (417)	P	2 25	84	S-L	63.4	1.500	0.749	CT	0.757	0.37	24.40			1973 86213
					63.4	1.500	0.749	CT	0.770	0.37	24.30			1973 86213
					64.5	1.500	0.750	CT	0.782	0.29	22.00			1973 86213
					64.5	1.500	0.749	CT	0.734	0.41	26.00			1973 86213
					65.3	1.500	0.750	CT	0.739	0.29	22.30			1973 86213

Table 7.9.2.1 (Con't)

CONDITION	ALUMINUM			2214			K(1C)			DATE	REFER				
	PRODUCT-- FORM	TEST THICK (IN)	TEMP (F)	SPECIMEN ORIENT	YIELD STRENGTH (KSI)	WIDTH (IN)	SPECIMEN-- THICK (IN)	DESIGN (IN)	CRACK LENGTH (IN)			2.5* K(1C)/TYS**2 (IN)	K(1C) MEAN (KSI*SQRT IN)	STAN DEV	
1651 (417)	P	2.25	84	S-L	65.3	1.500	0.750	CT	0.799	0.31	23.00	23.7/	1.5	1973	86213

Table 7.10.1.1

MEAN PLANE STRAIN FRACTURE TOUGHNESS DATA OF  
ALUMINUM ALLOY 2219 AT ROOM TEMPERATURE

CONDITION/HT	MEAN K <sub>IC</sub> ± STANDARD (KSI SORT(IN)) DEVIATION		(NUMBER OF SPECIMENS)	
	PLATE			
	L-I	I-L	S-L	
T851	33.4 ± 2.3 (48)	29.7 ± 3.2 (78)	23.0 ± 2.4 (14)	
T87	28.0 ± 3.0 (6)	22.0 ± 0.4 (2)	-----	
T87-300F 100HRS	34.8 ± 0.4 (2)	-----	-----	
FORGING				
	L-I	I-L	S-L	
T851	-----	-----	25.6 ± 3.1 (85)	
T852	39.2 ± 3.2 (25)	27.1 ± 2.2 (24)	25.3 ± 3.1 (60)	

Table 7.10.1.2

## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR

ALUMINUM 2219

## TEST CONDITIONS

SPECIMEN  
ORIENTATION L-TENVIRONMENT: L.H.A.  
AT R.T.

CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQ. (HZ)	DELTA K LEVELS: (KSI SQRT(IN))	2.5	5	10	20	50	100
T851	PLATE	0.08	0.10				7.10			
T851	PLATE	0.08	1.00	SPEC. THK=1.00"			7.60	94.0		
T851	PLATE	0.08	1.00				8.48			
T851	PLATE	0.08	6.00	SPEC. THK=1.00"			7.74	60.3		
T851	PLATE	0.08	6.00			0.40	4.77			
T851	PLATE	0.08	6.00	SPEC. THK=0.50"			3.52	26.5		
T851	PLATE	0.08	6.00				3.95	24.4		
T851	PLATE	0.08	63.30			0.28	4.67			
T851	PLATE	0.30	6.00			0.90				
T851	PLATE	0.50	6.00			0.72	8.15			
<hr/>										
T8511	EXTRUDED BAR	0.08	6.00			0.23	2.12			
T8511	EXTRUDED BAR	0.30	6.00				6.44			
<hr/>										
T852	BILLET	0.08	6.00				2.35			

Table 7.10.1.3

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR

ALUMINUM 2219

TEST CONDITIONS

SPECIMEN  
ORIENTATION L-TENVIRONMENT: LAB AIR  
AT R.T.

CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQ (HZ)	DELTA K LEVELS (KSI SQRT(IN))	FATIGUE CRACK GROWTH RATES (MICRO IN./CYCLE)					
					2.5	5	10	20	50	100
T851	PLATE	-1.00	1.00-20.00				5.92	52.3		
T851	PLATE	-1.00	6.00				6.81			
T851	PLATE	-0.50	5.20				6.89			
T851	PLATE	-0.30	6.00				6.88	52.5	3617	
T851	PLATE	-0.10	6.00				6.79	44.9	3707	
T851	PLATE	0.00	5.20				8.25	54.8		
T851	PLATE	0.00	6.00				4.33	34.6		
T851	PLATE	0.01	3.00				44.5	1622		
T851	PLATE	0.01	6.00				46.2	1788		
T851	PLATE	0.04	1.00-20.00				4.24			
T851	PLATE	0.05	1.00-20.00				2.46	33.9		
T851	PLATE	0.05	1.00-20.00				3.58			
T851	PLATE	0.05	1.00-20.00				5.14	48.3		
T851	PLATE	0.08	6.00				5.74			
T851	PLATE	0.10	1.00-20.00				44.9			
T851	PLATE	0.20	6.00				90.9			
T851	PLATE	0.30	6.00			0.69	7.86	76.3		
T851	PLATE	0.50	1.00-20.00				10.1			
T851	PLATE	0.60	1.00-20.00				12.2			
T851	PLATE	0.70	6.00			1.37	17.8	1173		

Table 7.10.1.4

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR

ALUMINUM 2219

## TEST CONDITIONS

SPECIMEN

ORIENTATION L-T

ENVIRONMENT

S.T.W.  
A.T.R.T

CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQ. (HZ)	DELTA K LEVELS (KSI SQRT(IN))	2.5	5	10	20	50	100
T851	PLATE	0.08	0.10					55.6		
T851	PLATE	0.08	1.00				7.14	64.0		
T851	PLATE	0.08	1.00			0.60				
T851	PLATE	0.08	6.00				10.6	59.5		
T851	PLATE	0.30	1.00				8.68	65.6		
T851	PLATE	0.50	1.00			0.80	11.6			
T8511	EXTRUDED BAR	0.08	1.00				7.39			
T852	FORGING	0.33	20.00					6.28		
T852	FORGING	0.33	20.00					10.2		



Table 7.10.1.5

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR

ALUMINUM 2219

TEST CONDITIONS

SPECIMEN  
ORIENTATION T-L

ENVIRONMENT: DRY AIR  
AT R. T.

CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQ. (HZ)	DELTA K LEVELS: (KSI SQRT(IN))	2.5	5	10	20	50	100
T852	FORGING	0.33	2.00-20.00				7.08	480		
T852	FORGING	0.33	2.00-20.00				6.78			
T852	FORGING	0.33	40.00			0.363	3.97			

Table 7.10.1.6

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR

ALUMINUM 2219

TEST CONDITIONS

SPECIMEN ORIENTATION 1-L

ENVIRONMENT: L.H.A.  
AT R.T.

CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQ. (HZ)	DELTA K LEVELS:		FATIGUE CRACK GROWTH RATES (MICRO IN/CYCLE)				
				(KSI SQRT(IN))		2.5	5	10	20	50
T851	PLATE	0.08	6.00					5.43	33.3	
T851	PLATE	0.08	6.00					8.71	100.	
T8511	EXTRUDED BAR	0.08	6.00					4.26		

Table 7.10.1.1.7

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR

ALUMINUM 2219

TEST CONDITIONS

SPECIMEN  
ORIENTATION T-L

ENVIRONMENT: H.H.A.  
AT R.T.

CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQ. (HZ)	DELTA K LEVELS: (KSI SQRT(IN))	2.5	5	10	20	50	100
T852	FORGING	0.33	2 00-20 00				8.32			
T852	FORGING	0.33	2 00-20 00				13.0			

Table 7.10.1.1.8

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR

ALUMINUM 2219

## TEST CONDITIONS

SPECIMEN  
ORIENTATION T-IENVIRONMENT S T W  
A T R T

CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQ. (HZ)	DELTA K LEVELS (KSI SQRT(IN))	FATIGUE CRACK GROWTH RATES (MICRO IN/CYCLE)				
				2.5	5	10	20	50	100
T851	PLATE	0.08	1.00		1.02	10.8	81.5		
T8511	EXTRUDED BAR	0.08	1.00		0.64	7.37			
T852	FORGING	0.33	2.00-20.00				9.83	204	
T852	FORGING	0.33	2.00-20.00				16.5		
T852	FORGING	0.33	20.00				10.3		

Table 7.10.2.1

CONDITION	ALUMINUM		YIELD (KSI)	TEST SPECIMEN ORIENT	THICK (IN)	TEMP (F)	SPECIMEN		CRACK LENGTH (IN)	2.5* (K(1C)/TYS)**2 (IN)	K(1C) MEAN (KSI*SQRT IN)	STAN DEV	DATE	REFER
	FORM	THICK					WIDTH (IN)	THICK (IN)						
T851	P	3.00	50.0	R.T.	L-T		8.000	2.000	CT	---	1.22	35.00		1974 90011
			50.1											
			50.1				5.044	1.503	CT	2.623	1.29	36.50		1978 MPC01
			50.1				6.016	1.998	CT	3.068	1.36	37.10		1978 MPC01
			50.1				4.019	1.999	CT	2.090	1.33	36.90		1978 MPC01
			50.1				6.000	1.999	CT	3.137	1.45	38.10		1973 86213
			50.1				5.010	1.987	CT	2.703	1.28	35.90		1973 86213
			50.1				5.010	1.503	CT	2.623	1.33	36.50		1973 86213
			50.1				4.000	1.999	CT	2.090	1.28	35.90		1973 86213
			50.1				4.000	1.998	CT	2.095	1.28	35.80		1973 86213
			50.1				5.010	2.000	CT	2.680	1.28	35.90		1973 86213
			51.0				2.982	1.374	CT	1.521	0.93	31.30		1978 MPC01
			51.0				2.977	1.374	CT	1.518	0.93	31.30		1978 MPC01
			51.0				3.000	1.420	NB	1.550	1.16	34.80		1973 86213
			51.0				3.000	1.420	NB	1.600	1.40	38.10		1973 86213
			51.0				3.000	1.420	NB	1.520	1.14	34.50		1973 86213
			51.0				2.978	1.374	CT	1.519	0.87	30.40		1978 MPC01
			51.6				3.027	1.500	CT	1.574	0.93	31.80		1978 MPC01
			51.6				3.004	1.500	CT	1.562	0.87	30.90		1978 MPC01
			51.7				4.989	1.750	CT	2.594	1.12	34.90		1978 MPC01
			52.0				3.022	1.376	CT	1.481	0.87	30.70		1978 MPC01
			52.0				3.000	1.498	CT	2.566	1.20	36.00		1973 86213
			52.0				2.975	1.376	CT	1.547	0.90	31.20		1978 MPC01
			52.0				5.000	1.498	CT	2.567	1.08	34.20		1973 86213
			52.4				3.026	1.499	CT	1.543	0.99	33.20		1978 MPC01
			52.4				3.022	1.500	CT	1.632	0.96	32.80		1978 MPC01
			52.4				2.996	1.499	CT	1.558	0.96	32.80		1978 MPC01
			52.5				2.987	1.499	CT	1.553	1.02	33.80		1978 MPC01
			52.5				2.977	1.499	CT	1.548	1.02	33.80		1978 MPC01
			52.5				4.973	2.000	CT	2.586	0.99	33.40		1978 MPC01
			52.5				4.987	2.503	CT	2.743	1.02	33.60		1978 MPC01
			52.6				4.962	1.751	CT	2.630	0.84	30.80		1978 MPC01
			52.8				4.987	2.001	CT	2.593	0.90	31.80		1978 MPC01
			53.0				3.027	1.503	CT	1.665	0.81	30.70		1978 MPC01
			53.0				5.045	2.000	CT	2.573	0.90	32.20		1978 MPC01
			53.4				5.010	1.997	CT	2.672	0.87	31.50		1973 86213
			53.5				4.965	2.002	CT	2.582	0.87	31.60		1978 MPC01
			53.5				4.967	2.501	CT	2.682	0.93	32.90		1978 MPC01
			53.5				5.018	2.002	CT	2.559	0.90	32.20		1978 MPC01
			53.6				4.954	2.002	CT	2.576	0.96	33.60		1978 MPC01

Table 7.10.2.1 (Con't.)

CONDITION	--PRODUCT--			TEST SPECIMEN ORIENT	YIELD STRENGTH (KSI)	ALUMINUM			K(1C)			K(1C) STAN DEV	DATE	REFER	
	FORM	THICK (IN)	THICK (IN)			WIDTH (IN)	THICK (IN)	DESIGN	CRACK LENGTH (IN)	2.5* K(1C)/TV5**2 (IN)	K(1C) MEAN DEV (KSI*SQRT IN)				
T851	P	2.90 3.00 1.00 1.00 3.00 2.90 2.90 2.50	R. T.	L-T	53.6	4.989	2.501	CT	2.644	0.99	33.80		1978	MP001	
					53.7	4.010	1.998	CT	2.043	0.79	30.10		1973	86213	
					53.8	1.990	0.965	CT	1.035	0.81	30.90		1978	MP001	
					53.8	2.016	0.965	CT	1.008	0.78	30.60		1978	MP001	
					53.8	1.990	0.965	CT	1.015	0.78	30.60		1978	MP001	
					54.0	8.000	1.996	CT	3.991	1.03	34.70		1973	85836	
					54.3	4.969	2.002	CT	2.584	0.81	31.20		1978	MP001	
					54.3	5.006	2.501	CT	2.703	0.81	31.00		1978	MP001	
					55.7	4.968	1.753	CT	2.633	0.96	34.60	33.4/	2.3	1978	MP001
					55.0	3.000	1.405	NB	1.612	1.00	34.70		1973	86213	
T851	P	1.37 1.37 1.75 1.75 1.75 1.37 1.37 1.37 1.37 1.37 3.25 1.37 1.37 1.37 1.37 1.37 1.37 1.37 1.37 1.37	R. T.	T-L	46.2	3.000	1.402	NB	1.524	1.10	32.60		1973	86213	
					47.4	1.994	1.000	CT	1.017	0.93	29.20		1978	MP001	
					48.0	3.000	1.508	CT	1.611	1.28	34.40		1972	84306	
					48.0	5.000	1.504	CT	2.615	1.48	37.00		1972	84306	
					48.0	5.000	1.504	CT	2.609	1.48	37.00		1972	84306	
					48.0	2.990	1.508	CT	1.573	1.24	33.90		1972	84306	
					49.2	2.985	1.405	NB	1.582	0.81	28.20		1978	MP001	
					49.2	3.016	1.402	NB	1.538	0.99	31.10		1978	MP001	
					49.2	2.974	1.402	NB	1.487	0.99	31.30		1978	MP001	
					49.2	2.974	1.405	NB	1.487	0.84	28.70		1978	MP001	
T851	P	1.37 1.37 1.37 1.37 1.37 1.37 1.37 1.37 1.37 1.37	R. T.	T-L	49.2	3.000	1.403	NB	1.526	1.09	32.50		1973	86213	
					49.2	3.008	1.403	NB	1.534	1.08	32.80		1978	MP001	
					49.2	2.991	1.402	NB	1.585	1.08	32.80		1978	MP001	
					49.2	3.000	1.405	NB	1.536	0.94	30.20		1973	86213	
					49.2	4.977	1.750	CT	2.638	0.84	28.90		1978	MP001	
					49.2	3.000	1.405	NB	1.634	0.92	29.90		1973	86213	
					49.2	3.000	1.402	NB	1.584	1.10	33.50		1973	86213	
					49.2	3.000	1.402	NB	1.605	1.16	33.50		1973	86213	
					49.3	2.973	1.000	CT	1.546	0.90	29.70		1978	MP001	
					49.3	3.000	1.388	CT	1.538	0.88	29.30		1972	82880	
T851	P	1.37 1.37 1.37 1.37 1.37 1.37 1.37 1.37 1.37 1.37	R. T.	T-L	49.3	2.990	1.000	CT	1.535	0.96	30.80		1978	MP001	
					49.3	3.002	1.000	CT	1.561	0.90	29.80		1978	MP001	
					49.3	2.000	0.875	CT	1.020	0.81	28.30		1978	MP001	
					49.3	2.014	0.875	CT	1.007	0.78	27.90		1978	MP001	
					49.3	2.975	1.125	CT	1.547	0.87	29.50		1978	MP001	
					49.3	2.000	1.057	CT	1.057	0.79	27.70		1972	82880	
					49.3	3.025	1.125	CT	1.573	0.87	29.30		1978	MP001	
					49.3	2.000	1.000	CT	1.000	0.78	27.70		1978	MP001	
					49.3	2.000	1.000	CT	1.000	0.78	27.70		1978	MP001	
					49.3	2.000	1.000	CT	1.000	0.78	27.70		1978	MP001	

Table 7.10.2.1 (Con't)

CONDITION	--PRODUCT--			YIELD (KSI)	ALUMINUM		W	-----SPECIMEN-----		CRACK LENGTH (IN)	2.5* (IN)	K(1C)/(TVS)**2 (KSI*SQRT IN)	K(1C) MEAN DEV (IN)	STAN DEV	DATE	REFER
	FORM	THICK (IN)	TEMP (F)		TEST	THICK (IN)		DESIGN	A							
T851	P	1.38		49.3	2.000	1.000	CT	1.082	0.77	27.40		1972	B2880			
		1.38		49.3	3.000	1.380	CT	1.557	0.86	28.90		1972	B2880			
		1.37		49.3	2.012	0.875	CT	1.026	0.84	28.70		1978	MP01			
		3.00		49.3	4.000	2.001	CT	2.077	1.07	32.30		1973	B6213			
		1.38		49.3	3.000	1.380	CT	1.555	0.86	28.90		1972	B2880			
		1.37		49.3	1.494	0.750	CT	0.792	0.67	25.80		1978	MP01			
		1.37		49.3	3.006	1.125	CT	1.563	0.90	29.70		1978	MP01			
		1.38		49.3	2.000	1.000	CT	1.069	0.77	27.40		1972	B2880			
		3.00		49.3	4.000	1.999	CT	2.085	1.05	32.00		1973	B6213			
		1.37		49.7	2.004	1.000	CT	1.042	0.75	27.40		1978	MP01			
		1.37		49.7	2.010	1.000	CT	1.045	0.84	29.10		1978	MP01			
		1.37		49.7	2.004	0.999	CT	1.042	0.81	28.60		1978	MP01			
		2.00		50.0	5.000	1.500	CT	-----	1.30	36.00		1974	90011			
		3.00		50.0	8.000	2.000	CT	-----	1.15	34.00		1974	90011			
		2.00		50.0	5.000	1.500	CT	-----	1.15	34.00		1974	90011			
		3.25		50.1	4.959	1.750	CT	2.628	0.81	28.80		1978	MP01			
		3.00		50.6	3.000	1.498	CT	1.550	0.72	27.20		1973	B6213			
		3.00		50.6	5.000	1.497	CT	2.582	0.82	28.90		1973	B6213			
		3.00		50.6	3.000	1.498	CT	1.550	0.71	26.90		1973	B6213			
		1.37		50.8	3.026	1.375	CT	2.575	0.80	28.60		1973	B6213			
	1.37		50.8	3.000	1.420	NB	1.543	0.78	28.80		1978	MP01				
	1.37		50.8	2.980	1.420	NB	1.500	0.81	29.00		1978	MP01				
	1.37		50.8	2.981	1.420	NB	1.520	0.93	31.40		1978	MP01				
	1.37		50.8	2.973	1.375	CT	1.550	1.29	36.60		1978	MP01				
	1.37		50.8	3.000	1.420	NB	1.546	0.72	27.50		1978	MP01				
	1.00		51.2	1.993	0.965	CT	1.560	1.05	33.30		1978	MP01				
	1.00		51.2	1.993	0.965	CT	1.096	0.75	28.40		1978	MP01				
	2.90		51.2	2.013	0.963	CT	1.067	0.78	28.90		1978	MP01				
	1.00		51.2	1.986	0.964	CT	1.013	0.72	28.00		1978	MP01				
	2.90		51.6	2.991	1.249	CT	1.645	0.78	29.40		1978	MP01				
	2.90		51.8	4.993	2.501	CT	2.696	0.70	27.90		1978	MP01				
	2.90		51.8	4.975	2.002	CT	2.587	0.62	26.20		1978	MP01				
	2.90		51.9	3.030	1.504	CT	1.697	0.65	26.80		1978	MP01				
	2.90		51.9	5.017	2.002	CT	2.609	0.70	27.60		1978	MP01				
	2.90		52.0	4.996	2.002	CT	2.598	0.72	28.20		1978	MP01				
	2.90		52.0	5.033	2.002	CT	2.617	0.65	27.00		1978	MP01				
	2.90		52.0	5.013	2.501	CT	2.657	0.70	28.00		1978	MP01				
	2.90		52.0	7.990	1.992	CT	4.067	1.05	33.70		1973	B5836				
	-----		52.2	5.008	2.002	CT	2.604	0.75	28.90		1978	MP01				

Table 7.10.2.1 (Con't)

CONDITION	--PRODUCT--			YIELD (KSI)	ALUMINUM			2219			K (IC)			K (IC)			DATE	REFER
	FORM	THICK (IN)	TEST SPECIMEN ORIENT		THICKNESS (IN)	WIDTH (IN)	THICKNESS (IN)	DESIGN	CRACK LENGTH (IN)	2.5* (IN)	K (IC)/TYS**2 (KSI*SGRT IN)	K (IC)	MEAN DEV	STAN DEV				
1851	P	2.90	R T	L-T	53.6	4.989	2.501	CT	2.644	0.99	33.80					1978	MPC01	
		3.00			53.7	4.010	1.998	CT	2.043	0.79	30.10					1973	86213	
		1.00			53.8	1.990	0.965	CT	1.035	0.81	30.90					1978	MPC01	
		1.00			53.8	2.016	0.965	CT	1.008	0.78	30.60					1978	MPC01	
		1.00			53.8	1.990	0.965	CT	1.015	0.78	30.60					1978	MPC01	
		3.00			54.0	8.000	1.996	CT	3.991	1.03	34.70					1973	85836	
		2.90			54.3	4.969	2.002	CT	2.584	0.81	31.20					1978	MPC01	
		2.90			54.3	5.006	2.501	CT	2.703	0.81	31.00					1978	MPC01	
		2.50			55.7	4.968	1.753	CT	2.633	0.96	34.60	33.4/	2.3			1978	MPC01	
1851	P	1.37	- 112	T-L	55.0	3.000	1.405	NB	1.612	1.00	34.70					1973	86213	
	1851	P	1.37	R T	T-L	46.2	3.000	1.402	NB	1.524	1.10	32.60					1973	86213
			1.37			47.4	1.994	1.000	CT	1.017	0.93	29.20					1978	MPC01
			1.75			48.0	3.000	1.508	CT	1.611	1.28	34.40					1972	84306
			1.75			48.0	5.000	1.504	CT	2.615	1.48	37.00					1972	84306
			1.75			48.0	5.000	1.504	CT	2.609	1.48	37.00					1972	84306
			1.75			48.0	2.990	1.508	CT	1.573	1.24	33.90					1972	84306
			1.37			49.2	2.985	1.405	NB	1.582	0.81	28.20					1978	MPC01
			1.37			49.2	3.016	1.402	NB	1.538	0.99	31.10					1978	MPC01
		1.37			49.2	2.974	1.402	NB	1.487	0.99	31.30					1978	MPC01	
1851		1.37			49.2	2.974	1.405	NB	1.487	0.84	28.70					1978	MPC01	
		1.37			49.2	3.000	1.403	NB	1.526	1.09	32.50					1973	86213	
		1.37			49.2	3.008	1.403	NB	1.534	1.08	32.80					1978	MPC01	
		1.37			49.2	2.991	1.402	NB	1.585	1.08	32.80					1978	MPC01	
		1.37			49.2	3.000	1.405	NB	1.634	0.92	29.90					1973	86213	
		3.25			49.2	4.977	1.750	CT	2.638	0.84	28.90					1973	86213	
		1.37			49.2	3.000	1.405	NB	1.634	0.92	29.90					1973	86213	
		1.37			49.2	3.000	1.402	NB	1.584	1.10	32.70					1973	86213	
		1.37			49.3	2.973	1.000	CT	1.546	0.90	29.70					1978	MPC01	
1851		1.38			49.3	3.000	1.380	CT	1.538	0.88	29.30					1972	82880	
		1.37			49.3	2.990	1.000	CT	1.555	0.96	30.80					1978	MPC01	
		1.37			49.3	3.002	1.000	CT	1.561	0.90	29.80					1978	MPC01	
		1.37			49.3	2.000	0.875	CT	1.020	0.81	28.30					1978	MPC01	
		1.37			49.3	2.014	0.875	CT	1.007	0.78	27.90					1978	MPC01	
		1.37			49.3	2.975	1.125	CT	1.547	0.87	29.50					1978	MPC01	
		1.38			49.3	2.000	1.000	CT	1.057	0.79	27.70					1972	82880	
		1.37			49.3	3.025	1.125	CT	1.573	0.87	29.30					1978	MPC01	



Table 7.10.2.1 (Cont.)

CONDITION	ALUMINUM				2219				K(1C)		K(1C) STAN DEV	DATE	REFER	
	---PRODUCT--- FORM	THICK (IN)	TEST SPECIMEN ORIENT	YIELD STRENGTH (KSI)	-----SPECIMEN-----		CRACK LENGTH (IN)	2.5* (IN)	K(1C)/TYS)**2 (KSI*SQRT IN)					
					WIDTH (IN)	THICK (IN)				DESIGN				A
T851	P	1.37	BB	S-L	1.000	0.500	CT	0.496	0.39	20.60	21.2/ 1.0	1973	86213	
	F	---	R T	L-S	3.001	1.501	CT	1.563	1.16	28.58		1976	MD001	
					3.001	1.499	CT	1.542	1.16	28.64		1976	MD001	
					3.001	1.499	CT	1.584	1.37	31.03		1976	MD001	
					3.003	1.500	CT	1.566	1.02	29.59		1976	MD001	
					3.001	1.500	CT	1.580	1.15	31.58		1976	MD001	
					3.003	1.499	CT	1.569	1.08	30.60		1976	MD001	
					3.005	1.500	CT	1.418	1.13	33.71		1976	MD001	
					3.003	1.500	CT	1.444	1.18	34.55		1976	MD001	
					1.998	1.001	CT	0.995	0.57	24.49	30.3/ 3.0	1976	MD001	
T851	F	---	R T	T-S	2.997	1.495	CT	1.589	0.64	22.91		1977	MD001	
	---	---	---	---	1.998	1.001	CT	1.000	0.63	23.96		1976	MD001	
	---	---	---	---	3.001	1.502	CT	1.619	0.50	21.42		1976	MD001	
	---	---	---	---	1.999	1.000	CT	1.003	0.71	25.90		1976	MD001	
	---	---	---	---	2.998	1.502	CT	1.607	0.92	29.13		1977	MD001	
	---	---	---	---	2.000	1.001	CT	1.059	0.73	26.01		1977	MD001	
	---	---	---	---	2.996	1.496	CT	1.615	0.79	27.04		1977	MD001	
	---	---	---	---	3.001	1.501	CT	1.555	0.51	21.78		1976	MD001	
	---	---	---	---	3.001	1.501	CT	1.531	0.67	25.13		1976	MD001	
	---	---	---	---	3.000	1.501	CT	1.621	0.52	22.14		1976	MD001	
T851	---	---	---	---	1.998	1.001	CT	1.047	0.86	28.90		1976	MD001	
	---	---	---	---	48.7	1.995	1.001	CT	1.033	0.75	26.67		1976	MD001
	---	---	---	---	49.0	2.997	1.495	CT	1.996	0.64	24.84		1977	MD001
	---	---	---	---	49.2	1.996	1.001	CT	0.999	0.66	25.29		1976	MD001
	---	---	---	---	49.2	1.997	1.000	CT	1.031	0.56	23.35		1976	MD001
	---	---	---	---	50.1	1.999	0.997	CT	1.033	0.69	26.35		1977	MD001
	---	---	---	---	50.4	3.000	1.501	CT	1.562	0.76	27.86		1976	MD001
	---	---	---	---	51.9	3.000	1.501	CT	1.563	0.71	27.77	25.3/ 2.3	1976	MD001
	T851	---	---	---	---	2.997	1.495	CT	1.643	0.67	24.00		1977	MD001
		---	---	R T	S-L	2.996	1.495	CT	1.661	0.67	24.08		1977	MD001
---		---	---	---	2.996	1.496	CT	1.616	0.68	24.13		1977	MD001	
---		---	---	---	2.996	1.495	CT	1.614	0.61	22.84		1977	MD001	
---		---	---	---	3.003	1.502	CT	1.556	0.62	23.40		1976	MD001	
---		---	---	---	3.001	1.501	CT	1.569	0.62	23.47		1976	MD001	
---		---	---	---	3.007	1.504	CT	1.700	0.69	24.75		1979	MD001	
---		---	---	---	1.999	1.001	CT	1.047	0.65	24.45		1977	MD001	
---		---	---	---	47.7									

Table 7.10.2.1 (Con't)

CONDITION	ALUMINUM		2219		K(1C)		K(1C) STAN DEV	DATE	REFER				
	---PRODUCT--- FORM	THICK (IN)	TEST SPECIMEN ORIENT (F)	YIELD STRENGTH (KSI)	-----SPECIMEN-----					CRACK LENGTH (IN)	2.5* (IN)	K(1C)/TYS**2 (KSI*SQRT IN)	
					WIDTH (IN)	THICK (IN)							DESIGN
T851	F	---	R T.	S-L	47.7	1.998	1.001	CT	1.070	0.67	24.72	1977	MD001
					47.8	3.001	1.501	CT	1.542	0.52	21.89	1976	MD001
					47.8	3.003	1.501	CT	1.532	0.64	24.27	1976	MD001
					47.9	2.997	1.501	CT	1.584	0.80	27.12	1977	MD001
					48.6	2.999	1.502	CT	1.617	0.77	27.14	1977	MD001
					48.7	1.997	1.001	CT	1.083	0.52	22.29	1976	MD001
					49.0	1.997	1.001	CT	1.026	0.74	26.83	1976	MD001
					49.0	1.998	1.001	CT	1.040	0.69	25.79	1976	MD001
					49.1	3.001	1.499	CT	1.575	0.77	27.41	1977	MD001
					49.1	1.998	1.000	CT	1.038	0.60	24.23	1976	MD001
					49.1	1.998	1.000	CT	1.039	0.63	24.70	1976	MD001
					49.1	2.999	1.502	CT	1.552	1.19	33.88	1977	MD001
					49.1	1.998	1.001	CT	1.050	0.58	23.79	1976	MD001
					49.1	2.000	1.001	CT	1.080	0.74	26.73	1977	MD001
					49.1	1.998	0.999	CT	1.033	0.64	24.89	1976	MD001
					49.1	3.001	1.501	CT	1.586	0.58	23.84	1976	MD001
					49.1	3.003	1.501	CT	1.572	0.62	24.90	1976	MD001
					49.1	1.997	1.000	CT	1.057	0.64	25.00	1976	MD001
					49.1	1.998	1.000	CT	1.035	0.62	24.51	1976	MD001
					49.1	3.001	1.502	CT	1.531	0.82	28.16	1977	MD001
					49.1	3.000	1.500	CT	1.636	0.58	23.85	1977	MD001
					49.1	1.998	1.001	CT	1.044	0.68	25.64	1977	MD001
					49.2	2.999	1.502	CT	1.602	0.46	21.19	1976	MD001
					49.2	3.003	1.501	CT	1.608	0.45	20.97	1976	MD001
					49.3	2.997	1.496	CT	1.592	0.92	29.96	1977	MD001
					49.3	2.996	1.496	CT	1.633	0.83	28.54	1977	MD001
					49.4	3.007	1.502	CT	1.516	0.94	30.42	1977	MD001
					49.5	3.001	1.501	CT	1.535	0.58	24.00	1976	MD001
					49.5	3.002	1.500	CT	1.528	0.77	27.60	1976	MD001
					49.7	2.999	1.500	CT	1.595	0.80	28.16	1977	MD001
					49.7	3.000	1.500	CT	1.634	0.79	28.03	1977	MD001
					49.7	3.000	1.504	CT	1.641	0.57	23.89	1978	MD001
					49.7	3.000	1.499	CT	1.626	0.82	28.62	1977	MD001
					49.7	3.000	1.501	CT	1.586	0.63	25.12	1978	MD001
					49.8	1.996	1.001	CT	1.010	0.38	19.90	1976	MD001
					49.8	1.996	1.001	CT	1.040	0.43	20.75	1976	MD001
					49.9	1.996	1.002	CT	1.071	0.71	26.69	1976	MD001
					49.9	2.000	1.001	CT	1.053	0.51	22.66	1977	MD001
					49.9	1.997	1.002	CT	1.065	0.66	25.79	1976	MD001

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7.10-15

Table 7.10.2.1 (Con't)

CONDITION	ALUMINUM				2219		K(1C)		K(1C) STAN K(1C) MEAN DEV (KSI*SQRT IN)	DATE	REFER
	--PRODUCT-- FORM	THICK (IN)	TEST TEMP (F)	SPECIMEN ORIENT	YIELD STRENGTH (KSI)	-----SPECIMEN----- WIDTH THICK DESIGN (IN) (IN)		CRACK LENGTH (IN)			
						W	B				
T852	F	---	R.T.	T-S	47.2	3.000	1.500	CT	1.574	1.12	1976 MD001
		---			47.8	3.000	1.502	CT	1.562	0.77	1976 MD001
		---			47.9	2.999	1.501	CT	1.578	0.81	1976 MD001
		---			48.0	3.000	1.502	CT	1.549	0.91	1976 MD001
T852	F	5.50	R.T.	T-L	43.1	5.000	2.500	CT	2.620	1.07	1977 AL001
		5.50			43.1	5.000	2.500	CT	2.570	1.10	1977 AL001
		---			44.0	5.000	1.984	CT	2.502	0.75	1973 85836
		---			44.0	5.000	1.998	CT	2.271	0.63	1973 85836
		7.50			44.2	3.000	1.500	CT	1.540	0.81	1977 AL001
		7.50			44.2	3.000	1.500	CT	1.530	0.69	1977 AL001
		4.50			45.7	5.000	2.500	CT	2.540	0.95	1977 AL001
		4.50			45.7	5.000	2.500	CT	2.530	0.97	1977 AL001
		5.50			46.4	5.000	2.500	CT	2.520	0.74	1977 AL001
		3.50			49.8	5.000	2.500	CT	2.580	0.80	1977 AL001
		3.50			49.8	5.000	2.500	CT	2.560	0.83	1977 AL001
		3.50			49.8	5.000	2.500	CT	2.560	0.80	1977 AL001
		2.50			49.9	5.000	2.490	CT	2.570	0.68	1977 AL001
		2.50			49.9	5.000	2.500	CT	2.560	0.94	1977 AL001
		2.50			49.9	5.000	2.490	CT	2.510	0.68	1977 AL001
		3.50			50.2	5.000	2.500	CT	2.530	0.68	1977 AL001
		3.50			50.2	5.000	2.500	CT	2.520	0.67	1977 AL001
		2.00			50.6	3.000	1.500	CT	1.510	0.84	1977 AL001
		4.50			50.6	5.000	2.500	CT	2.570	0.83	1977 AL001
		2.00			50.6	3.000	1.500	CT	1.560	0.79	1977 AL001
		2.00			50.6	3.000	1.500	CT	1.560	0.83	1977 AL001
		4.50			50.6	5.000	2.500	CT	2.510	0.87	1977 AL001
		4.50			50.6	5.000	2.500	CT	2.510	0.74	1977 AL001
T852	F	3.00	82	T-L	53.3	4.000	1.501	CT	2.037	0.43	1973 86213
T852	F	3.50	84	T-L	48.0	3.990	1.686	CT	2.077	0.87	1973 86213
T852	F	6.75	85	T-L	46.2	3.990	1.997	CT	2.067	0.89	1973 86213
		6.75			46.5	3.990	1.997	CT	2.127	0.95	1973 86213
		6.75			49.2	4.000	1.997	CT	2.080	0.56	1973 86213
		6.75			49.7	3.990	1.997	CT	1.987	0.62	1973 86213
		6.75			49.7	4.000	1.997	CT	2.019	0.51	1973 86213
									25.3/	2.7	1973 86213

Table 7.10.2.1 (Con't)

CONDITION	ALUMINUM				2219		K(1C)		K(1C) STAN MEAN DEV (KSI*SQRT IN)	DATE	REFER	
	--PRODUCT-- FORM	THICK (IN)	TEST TEMP (F)	SPECIMEN ORIENT	YIELD STRENGTH (KSI)	-----SPECIMEN-----		CRACK LENGTH (IN)				
						WIDTH (IN)	THICK (IN)					DESIGN
T852	F	----	R T.	S-T	43.0	3.000	1.502	CT	1.565	1.20	29.88	1976 MD001
		----			44.7	2.999	1.501	CT	1.564	0.98	28.00	1976 MD001
		----			45.2	2.999	1.500	CT	1.562	0.82	25.89	1976 MD001
		----			48.8	3.000	1.502	CT	1.573	0.76	26.97	1976 MD001
T852	F	----	82	S-T	49.1	3.000	1.501	CT	1.546	1.03	31.64	28.5/ 2.3 1976 MD001
		----			52.7	2.500	0.748	CT	1.244	0.46	22.60	1973 86213
		----			50.0	2.500	1.000	CT	1.231	0.73	27.10	1973 86213
		----			44.9	2.500	1.249	CT	1.233	0.67	23.30	1973 86213
T852	F	6.75	85	S-T	46.7	2.500	1.249	CT	1.234	0.62	23.30	1973 86213
		6.75			46.7	2.500	1.249	CT	1.243	0.69	24.60	1973 86213
		6.75			48.7	2.500	0.998	CT	1.267	0.60	23.80	1973 86213
		6.75			49.7	2.500	0.998	CT	1.185	0.51	22.50	23.5/ 0.8 1973 86213
T852	F	----	R T.	S-L	42.6	3.000	1.500	CT	1.594	0.59	20.72	1977 MD001
		----			42.9	1.997	0.999	CT	1.077	0.72	23.09	1976 MD001
		----			42.9	1.997	0.999	CT	1.047	0.69	22.65	1976 MD001
		----			43.2	3.001	1.502	CT	1.632	0.92	26.28	1977 MD001
		----			43.2	3.001	1.501	CT	1.666	0.77	24.02	1977 MD001
		----			43.6	1.999	0.999	CT	1.077	0.67	22.73	1976 MD001
		----			44.0	3.009	1.500	CT	1.570	0.66	22.66	1976 MD001
		----			44.0	3.001	1.501	CT	1.586	0.63	22.46	1976 MD001
		----			44.0	3.009	1.502	CT	1.586	0.68	22.96	1976 MD001
		----			44.0	2.998	1.500	CT	1.596	0.88	26.25	1976 MD001
		----			44.0	2.999	1.500	CT	1.570	0.83	25.39	1976 MD001
		7.50			44.1	4.000	2.000	CT	2.050	0.88	26.10	1977 AL001
		7.50			44.1	4.000	2.000	CT	2.020	0.87	26.00	1977 AL001
		----			44.2	2.999	1.500	CT	1.614	0.88	26.37	1976 MD001
		----			44.2	3.000	1.500	CT	1.590	1.20	30.73	1976 MD001
		----			44.2	2.999	1.500	CT	1.598	0.81	25.17	1976 MD001
		----			44.2	3.000	1.502	CT	1.568	0.91	26.71	1976 MD001
		----			44.2	3.000	1.499	CT	1.594	1.36	32.71	1976 MD001
		----			44.2	3.000	1.502	CT	1.566	0.90	26.65	1976 MD001
		----			44.2	3.000	1.500	CT	1.603	1.41	33.20	1976 MD001
		----			44.2	3.000	1.500	CT	1.572	1.19	30.95	1976 MD001
		----			44.5	3.001	1.499	CT	1.597	0.54	20.84	1976 MD001
		----			44.5	3.005	1.501	CT	1.586	0.62	22.32	1976 MD001

Table 7.10.2.1 (Con't)

CONDITION	---PRODUCT---		TEST TEMP (F)	SPECIMEN ORIENT	YIELD STRENGTH (KSI)	ALUMINUM		2219		K(1C)		CRACK LENGTH (IN)	2.5* (K(1C)/TVS)**2 (IN)	K(1C) MEAN DEV (KSI*SQRT IN)	K(1C) STAN DEV	DATE	REFER
	FORM	THICK (IN)				WIDTH (IN)	THICK (IN)	DESIGN	A	B							
T852	F	---	R.T.	S-L	44.5	3.001	1.502	CT	1.468	1.07	29.23	1976	MD001				
		44.5			3.000	1.500	CT	1.591	0.62	22.23	1976	MD001					
		44.5			3.007	1.501	CT	1.607	0.60	21.91	1976	MD001					
		---			---	---	---	44.7	1.998	0.999	CT	1.079	0.64	22.75	1976	MD001	
		---			---	---	---	45.3	1.997	0.998	CT	1.097	0.68	23.66	1976	MD001	
		---			---	---	---	45.4	3.000	1.501	CT	1.571	1.01	28.90	1976	MD001	
		---			---	---	---	45.4	3.001	1.501	CT	1.582	0.95	28.07	1976	MD001	
		---			---	---	---	45.6	3.001	1.501	CT	1.478	1.01	28.99	1976	MD001	
		---			---	---	---	46.7	2.996	1.502	CT	1.486	1.43	35.32	1977	MD001	
		---			---	---	---	46.8	1.995	1.000	CT	1.063	0.63	23.61	1976	MD001	
		---			---	---	---	47.0	3.000	1.500	CT	1.510	0.56	22.20	1977	AL001	
		4 50			4 50	---	---	47.0	3.000	1.500	CT	1.550	0.67	24.40	1977	AL001	
		4 50			---	---	---	47.0	3.000	1.500	CT	1.530	0.67	24.30	1977	AL001	
		5 50			---	---	---	47.2	2.000	1.000	CT	1.030	0.61	23.40	1977	AL001	
		---			---	---	---	47.2	3.001	1.502	CT	1.514	0.90	28.45	1976	MD001	
		5 50			---	---	---	47.2	2.000	1.000	CT	1.030	0.63	23.60	1977	AL001	
		---			---	---	---	48.9	1.997	0.999	CT	1.051	0.58	23.67	1976	MD001	
		---			---	---	---	49.1	3.000	1.501	CT	1.616	0.67	25.44	1977	MD001	
		---			---	---	---	49.3	3.003	1.501	CT	1.586	0.81	28.09	1976	MD001	
		---			---	---	---	49.6	3.003	1.502	CT	1.628	0.54	23.07	1977	MD001	
		3 50			---	---	---	49.7	2.000	1.000	CT	1.030	0.65	25.30	1977	AL001	
		3 50			---	---	---	49.7	2.000	1.000	CT	1.020	0.67	25.80	1977	AL001	
		3 50			---	---	---	49.7	2.000	1.000	CT	1.040	0.64	25.10	1977	AL001	
		5 50			---	---	---	50.8	4.000	2.000	CT	2.040	0.60	24.90	1977	AL001	
		5 50			---	---	---	50.8	4.000	2.000	CT	2.050	0.69	26.60	1977	AL001	
		5 50			---	---	---	50.8	4.000	2.000	CT	2.040	0.59	24.70	1977	AL001	
		3 50			---	---	---	51.1	2.000	1.000	CT	1.040	0.62	25.90	1977	AL001	
		2 50			---	---	---	51.1	2.000	1.000	CT	1.010	0.44	21.40	1977	AL001	
		2 50			---	---	---	51.1	2.000	1.000	CT	1.010	0.43	21.20	1977	AL001	
		2 50			---	---	---	51.1	2.000	1.000	CT	1.010	0.49	22.60	1977	AL001	
		3 50			---	---	---	51.1	2.000	1.000	CT	1.020	0.61	25.20	1977	AL001	
		3 50			---	---	---	51.1	2.000	1.000	CT	1.010	0.54	23.80	1977	AL001	
		4 50			---	---	---	51.2	3.000	1.500	CT	1.570	0.52	23.40	1977	AL001	
		4 50			---	---	---	51.2	3.000	1.500	CT	1.530	0.68	26.70	1977	AL001	
		4 50			---	---	---	51.5	3.000	1.500	CT	1.570	0.63	25.70	1977	AL001	
		2 00			---	---	---	51.5	1.500	0.750	CT	0.800	0.62	25.60	1977	AL001	
		---			---	---	---	52.3	1.997	1.001	CT	1.044	0.60	25.63	25.3/	3.1	1976

Table 7.10.2.1 (Con't)

CONDITION	ALUMINUM				2219				K(1C)				K(1C) STAN DEV	DATE	REFER	
	--PRODUCT--		TEST SPECIMEN ORIENT	YIELD STRENGTH (KSI)	-----SPECIMEN-----		CRACK LENGTH (IN) A	2.5*		K(1C) MEAN (KSI*SQRT IN)						
	FORM	THICK (IN)			THICK (IN)	WIDTH (IN)		THICK (IN)	DESIGN		(IN)	(IN)				K(1C) TVB**2 (KSI*SQRT IN)
T87	P	1.50	- 300	L-T	67.0	5.000	1.468	CT	2.528	0.95	41.30	0.95	1972	85631		
		1.50			67.0	5.000	1.470	CT	2.593	0.92	40.50	0.92	1972	85631		
T87	P	2.00	R.T.	L-T	56.7	2.000	0.999	CT	1.012	0.50	25.40	0.50	1973	86213		
		2.00			56.7	4.000	2.000	CT	2.039	0.59	27.50	0.59	1973	86688		
		2.00			56.7	4.000	2.000	CT	1.998	0.58	27.40	0.58	1973	86688		
		2.00			56.7	2.000	1.000	CT	1.003	0.54	26.30	0.54	1973	86213		
		2.00			56.7	4.000	2.000	CT	2.044	0.60	27.70	0.60	1973	86688		
T87	P	1.50			59.4	5.000	1.467	CT	2.570	0.82	33.90	0.82	1972	85631		
		1.50	300	L-T	----	5.000	1.466	CT	2.581	----	25.40	----	1972	85631		
		1.50			----	5.000	1.466	CT	2.573	----	34.40	29.9/	6.4	1972	85631	
		2.50	- 423	T-S	----	2.000	1.252	CT	1.100	0.58	35.00			1972	84319	
		2.50			----	2.500	1.255	NB	1.220	1.00	47.20			1972	84319	
T87	P	2.50			73.0	2.500	1.253	NB	1.240	1.10	48.80			1972	84319	
		2.50			73.0	2.000	1.231	CT	1.110	0.51	33.00	41.0/	8.2	1972	84319	
		2.50	- 320	T-S	----	2.000	1.249	CT	1.120	0.55	31.30			1972	84319	
		2.50			----	2.500	1.249	NB	1.220	1.00	43.30			1972	84319	
		2.50			67.0	2.000	1.231	CT	1.140	0.55	31.40			1972	84319	
T87	P	2.50			67.0	2.500	1.254	NB	1.230	1.00	41.60	36.9/	6.4	1972	84319	
		2.50	R.T.	T-S	----	2.500	1.253	NB	1.240	1.10	36.40			1972	84319	
		2.50			----	2.000	1.252	CT	1.110	0.57	26.10			1972	84319	
		2.50			59.0	2.500	1.250	NB	1.270	1.10	36.20			1972	84319	
		2.50			59.0	2.000	1.252	CT	1.140	0.58	26.40	31.3/	5.8	1972	84319	
T87	P	1.50	- 300	T-L	67.0	5.000	1.466	CT	2.671	----	32.50	----	1972	85631		
T87	P	1.00	R.T.	T-L	57.1	2.000	0.970	CT	1.050	0.36	21.70			1973	86213	
		1.00			57.1	2.000	0.970	CT	1.059	0.38	22.20	22.0/	0.4	1973	86213	
T87	P	1.00	82	T-L	57.1	2.000	0.971	CT	1.034	0.40	22.70			1973	86213	
T87	P	1.00	84	T-L	57.1	2.000	0.971	CT	1.051	0.37	21.90			1973	86213	
		1.00			57.1	2.000	0.970	CT	1.052	0.36	21.80			1973	86213	
		1.00			57.1	2.000	0.970	CT	1.072	0.36	21.70	21.8/	0.1	1973	86213	

Table 7.10.2.1 (Con't)

CONDITION	ALUMINUM									
	--PRODUCT-- FORM	THICK (IN)	TEST SPECIMEN ORIENT	YIELD (KSI)	-----SPECIMEN-----			CRACK LENGTH (IN)	2.5* (K(1C)/TYS)**2 (IN)	K(1C) STAN K(1C) MEAN DEV (KSI*SQRT IN)
					WIDTH (IN)	THICK (IN)	DESIGN			
					W	B	A			
T87-300F 100HR P	1.50	R.T.	L-T	---	5.000	1.467	CT	2.560	---	34.50
	1.50			---	5.000	1.467	CT	2.572	---	35.10
										34.8/
										0.4
										1972 85631
										1972 85631



Table 7.10.2.2

CONDITION	ALUMINUM		2219		K(C)												
	--PRODUCT--		TEST SPEC		YIELD		THICK		SPECIMEN		CRACK LENGTH		CROSS STRESS		K(C)		
	FORM	THICK (IN)	TEMP (F)	DR	STR (KSI)	W	THICK (IN)	B	INIT (IN)	FINAL (IN)	DNBET (KSI)	MAX (KSI)	K(APP) (KSI*SQRT IN)	STAN DEV	K(C)	STAN	
T81	S	0.06	R.T.	L-T	53.0	2.000	0.062	0.627	1.034	34.70	36.60	38.65*	56.24*		1973	86213	
		0.06			53.0	2.000	0.062	0.627	0.875	34.60	36.30	38.34*	48.36*		1973	86213	
		0.06	R.T.	T-L	53.0	2.000	0.062	0.626	0.863	34.50	35.80	37.81*	47.19*		1973	86213	
		0.06			53.0	2.000	0.062	0.628	0.899	34.20	35.50	37.57*	48.32*		1973	86213	
BUCKLING OF CRACK EDGES NOT RESTRAINED																	
T851	S	0.12	R.T.	L-T	50.6	3.000	0.123	1.090	1.700	---	33.00	47.07*	67.98*		1973	86213	
		0.12			50.6	3.000	0.127	1.070	1.860	---	32.50	45.78*	74.10*		1973	86213	
		0.12			50.6	3.000	0.127	1.090	1.720	---	32.10	45.79*	66.95*		1973	86213	
		0.12			51.1	3.000	0.127	1.110	1.760	---	31.60	45.44*	71.31*		1973	86213	
		0.12			51.1	3.000	0.126	1.100	1.930	---	31.90	45.79*	67.57*		1973	86213	
		0.12			51.1	3.000	0.127	1.100	1.670	---	31.70	45.50*	76.19*		1973	86213	
		0.12			52.0	3.000	0.127	1.080	1.740	---	32.10	45.50*	64.11*		1973	86213	
		0.12			52.0	3.000	0.127	1.100	2.000	---	31.40	45.07*	67.79*		1973	86213	
		0.12			52.0	3.000	0.127	1.130	---	---	31.00	45.33*	78.71*		1973	86213	
		0.12			52.0	3.000	0.126	1.080	1.740	---	31.50	44.65*	---		1973	86213	
		1.00	R.T.	L-T	50.6	20.000	1.000	7.000	10.500	---	18.30	65.72	66.52*		1973	86213	
		1.00			50.6	20.000	1.000	7.000	10.350	---	19.60	70.39	90.21		1973	86213	
T851	P	1.00			50.6	20.000	1.000	7.000	9.770	---	19.30	69.31	95.32*		1973	86213	
		1.00			50.6	20.000	1.000	7.000	10.200	---	17.60	70.39	89.12		1973	86213	
		1.00			51.1	20.000	1.000	7.000	10.050	---	16.00	57.46	94.05		1973	86213	
		1.00			51.1	20.000	1.000	7.000	10.100	---	16.00	57.46	75.75		1973	86213	
		1.00			51.1	20.000	1.000	7.000	9.450	---	16.30	58.53	77.51		1973	86213	
		1.00			51.1	20.000	1.000	7.000	9.750	---	16.00	57.46	71.81		1973	86213	
		1.00			52.0	20.000	1.000	7.000	10.400	---	15.80	56.74	72.83		1973	86213	
		1.00			52.0	20.000	1.000	7.000	10.500	---	18.60	66.79	90.86		1973	86213	
		1.00			52.0	20.000	1.000	7.000	10.870	---	18.80	67.51	92.67		1973	86213	
		1.00			52.0	20.000	1.000	7.000	12.000	---	18.00	64.64	91.75		1973	86213	
		1.00			52.0	20.000	1.000	7.000	12.000	---	18.30	65.72	64.2/ 5.3 103.63* 84.7/ 9.0	1973	86213		

\*NOTE- NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STD. DEV.

Table 7.10.2.2 (Con't)

CONDITION	ALUMINUM		2219		K(C)																						
	--PRODUCT--		CRACK LENGTH		STRESS																						
	FORM		THICK		MAX																						
	THICK (IN)	TEMP (F)	OR	YIELD (KSI)	INIT (IN)	FINAL (IN)	ONSET (KSI)	MAX (KSI)	STAN DEV (KSI*SQRT IN)	BTAN	DEV	REFER															
T851	S	0.12	R.T.	T-L	49.3	3.000	0.126	1.100	1.680	---	30.10	43.20*	61.24*	1973	86213												
																W	B	2A(D)	2A(F)	S(O)	S(MAX)	K(C)	K(C)*SQRT IN	K(C)	K(C)*SQRT IN	DATE	REFER
T851	P	1.00	R.T.	T-L	49.3	20.000	1.000	7.000	9.500	---	14.90	53.51	67.17	1973	86213												
																W	B	2A(D)	2A(F)	S(O)	S(MAX)	K(C)	K(C)*SQRT IN	K(C)	K(C)*SQRT IN	DATE	REFER
T851	S	0.12	R.T.	T-L	49.3	3.000	0.127	1.090	1.560	---	29.20	41.65*	55.25*	1973	86213												
																W	B	2A(D)	2A(F)	S(O)	S(MAX)	K(C)	K(C)*SQRT IN	K(C)	K(C)*SQRT IN	DATE	REFER
T851	P	1.00	R.T.	T-L	49.3	20.000	1.000	7.000	10.100	---	15.10	54.23	71.81	1973	86213												
																W	B	2A(D)	2A(F)	S(O)	S(MAX)	K(C)	K(C)*SQRT IN	K(C)	K(C)*SQRT IN	DATE	REFER
T851	S	0.12	R.T.	T-L	49.3	3.000	0.126	1.100	1.740	---	29.80	42.77*	62.93*	1973	86213												
																W	B	2A(D)	2A(F)	S(O)	S(MAX)	K(C)	K(C)*SQRT IN	K(C)	K(C)*SQRT IN	DATE	REFER
T851	P	1.00	R.T.	T-L	49.3	20.000	1.000	7.000	9.300	---	14.70	52.79	69.28	1973	86213												
																W	B	2A(D)	2A(F)	S(O)	S(MAX)	K(C)	K(C)*SQRT IN	K(C)	K(C)*SQRT IN	DATE	REFER
T851	S	0.12	R.T.	T-L	50.8	3.000	0.127	1.080	1.560	---	28.50	42.34*	55.81*	1973	86213												
																W	B	2A(D)	2A(F)	S(O)	S(MAX)	K(C)	K(C)*SQRT IN	K(C)	K(C)*SQRT IN	DATE	REFER
T851	P	1.00	R.T.	T-L	50.2	20.000	1.000	7.000	10.050	---	13.00	46.68	61.55	1973	86213												
																W	B	2A(D)	2A(F)	S(O)	S(MAX)	K(C)	K(C)*SQRT IN	K(C)	K(C)*SQRT IN	DATE	REFER
T851	S	0.12	R.T.	T-L	50.8	3.000	0.127	1.100	1.620	---	30.00	43.06*	58.85*	1973	86213												
																W	B	2A(D)	2A(F)	S(O)	S(MAX)	K(C)	K(C)*SQRT IN	K(C)	K(C)*SQRT IN	DATE	REFER
T851	P	1.00	R.T.	T-L	50.2	20.000	1.000	7.000	9.590	---	28.30	40.37*	54.52*	1973	86213												
																W	B	2A(D)	2A(F)	S(O)	S(MAX)	K(C)	K(C)*SQRT IN	K(C)	K(C)*SQRT IN	DATE	REFER
T851	S	0.12	R.T.	T-L	51.2	3.000	0.127	1.100	1.380	---	30.30	43.49*	58.02*	1973	86213												
																W	B	2A(D)	2A(F)	S(O)	S(MAX)	K(C)	K(C)*SQRT IN	K(C)	K(C)*SQRT IN	DATE	REFER
T851	P	1.00	R.T.	T-L	51.2	3.000	0.127	1.080	1.990	---	30.30	42.95*	58.37*	1973	86213												
																W	B	2A(D)	2A(F)	S(O)	S(MAX)	K(C)	K(C)*SQRT IN	K(C)	K(C)*SQRT IN	DATE	REFER
T851	S	0.12	R.T.	T-L	51.2	3.000	0.127	1.100	1.480	---	29.20	41.91*	52.67*	1973	86213												
																W	B	2A(D)	2A(F)	S(O)	S(MAX)	K(C)	K(C)*SQRT IN	K(C)	K(C)*SQRT IN	DATE	REFER
T851	P	1.00	R.T.	T-L	51.2	20.000	1.000	7.000	10.000	---	15.00	53.87	70.70	1973	86213												
																W	B	2A(D)	2A(F)	S(O)	S(MAX)	K(C)	K(C)*SQRT IN	K(C)	K(C)*SQRT IN	DATE	REFER
T851	S	0.12	R.T.	T-L	51.2	20.000	1.000	7.000	10.000	---	15.10	54.23	71.17	1973	86213												
																W	B	2A(D)	2A(F)	S(O)	S(MAX)	K(C)	K(C)*SQRT IN	K(C)	K(C)*SQRT IN	DATE	REFER
T851	P	1.00	R.T.	T-L	51.2	20.000	1.000	7.000	10.000	---	15.00	54.23	71.17	1973	86213												
																W	B	2A(D)	2A(F)	S(O)	S(MAX)	K(C)	K(C)*SQRT IN	K(C)	K(C)*SQRT IN	DATE	REFER

\*NOTE- NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STD. DEV.

Table 7.10.2.2 (Con't)

CONDITION	ALUMINUM		2219		K(C)											
	--PRODUCT-- FORM	THICK (IN)	TEST SPEC OR (F)	YIELD STR (KSI)	SPECIMEN		CRACK LENGTH CROSS STRESS				K(APP) STAN		K(C) STAN			
					WIDTH (IN)	THICK (IN)	INIT (IN)	FINAL (IN)	ONSET (KSI)	MAX (KSI)	K(APP) (KSI*SQRT IN)	MEAN DEV	K(C) (KSI*SQRT IN)	MEAN DEV		
															W	B
BUCKLING OF CRACK EDGES RESTRAINED																
T87	S	0.06	- 423	L-T	70.7	6.700	0.068	0.820	---	---	58.20	66.67*	---	---	1971	80104
					70.7	6.700	0.069	1.030	---	---	55.70	71.90*	---	---	1971	80104
					70.7	6.700	0.068	1.180	---	---	53.60	74.40*	---	---	1971	80104
T87	S	0.06	- 423	L-T	73.8	15.930	0.062	5.060	6.410	---	26.30	79.13	92.91	1966	69759	
					73.8	15.990	0.061	5.000	5.980	---	26.30	78.49	78.8/ 0.5	88.35	1966	69759
					64.5	5.500	0.068	0.620	---	---	57.10	56.80*	---	---	1971	80104
T87	S	0.06	- 320	L-T	64.5	5.500	0.069	0.420	---	---	61.50	50.13*	---	---	1971	80104
					64.5	5.500	0.068	0.480	---	---	60.20	52.52*	---	---	1971	80104
					64.5	5.500	0.068	0.330	---	---	63.20	49.60*	---	---	1971	80104
T87	S	0.06	- 320	L-T	64.5	6.700	0.069	1.200	---	---	51.10	71.58*	---	---	1971	80104
					64.5	6.700	0.067	0.880	---	---	55.90	66.43*	---	---	1971	80104
					64.5	6.700	0.068	1.000	---	---	54.60	69.39*	---	---	1971	80104
T87	S	0.06	R. T.	L-T	55.0	5.500	0.068	0.620	---	---	47.90	47.64*	---	---	1971	80104
					55.0	5.500	0.067	0.400	---	---	51.30	40.80*	---	---	1971	80104
					55.0	5.500	0.067	0.520	---	---	49.80	45.26*	---	---	1971	80104
T87	S	0.06	R. T.	L-T	55.0	5.500	0.068	0.330	---	---	52.50	37.88*	---	---	1971	80104
					55.0	6.700	0.067	0.910	---	---	47.30	57.20*	---	---	1971	80104
					55.0	6.700	0.068	1.000	---	---	46.10	58.58*	---	---	1971	80104
T87	S	0.10	R. T.	L-T	58.5	3.500	0.100	0.750	0.980	---	46.40	51.84*	60.52*	1962	62306	
					58.5	6.000	0.100	2.000	2.460	---	34.60	65.90*	76.06*	1962	62306	
					58.5	12.000	0.100	2.000	2.680	---	41.30	74.48*	87.44*	1962	62306	
T87	S	0.10	R. T.	L-T	58.5	12.000	0.100	4.000	4.770	---	27.90	75.15	84.79	1962	62306	
					58.5	24.000	0.100	20.000	20.650	---	6.40	70.51	78.16	1962	62306	
					58.5	24.000	0.100	4.000	5.730	---	33.90	86.46	105.43	1962	62306	

\*NOTE- NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STD. DEV

Table 7.10.2.2 (Con't)

CONDITION	ALUMINUM		2219		K(C)																	
	--PRODUCT-- FORM	THICK (IN)	TEST TEMP (F)	SPEC OR STR (KSI)	YIELD (KSI)	CRACK LENGTH CROSS STRESS										K(C) STAN						
						---SPECIMEN---		WIDTH		THICK		INIT		FINAL		ONSET		MAX		K(APP) (KSI*SQRT IN)	MEAN DEV	STAN
						W	B	(IN)	(IN)	(IN)	(IN)	2A(D)	2A(F)	S(D)	S(MAX)	(KSI)	(KSI)	(KBI*SQRT IN)	K(C)			
BUCKLING OF CRACK EDGES RESTRAINED																						
T87	S	0.10	R. T.	L-T	58.5	24.000	0.100	0.100	8.000	9.580	---	24.00	91.42	---	103.46	---	1962	62306				
		0.10			58.5	24.000	0.100	0.100	18.000	19.430	---	7.40	63.61	---	75.31	---	1962	62306				
		0.10			58.5	24.000	0.100	0.100	18.000	18.620	---	8.40	72.20	---	77.36	---	1962	62306				
		0.10			58.5	24.000	0.100	0.100	12.000	13.650	---	17.80	91.90	---	104.11	---	1962	62306				
		0.10			58.5	24.000	0.100	0.100	2.000	2.590	---	42.40	75.48	---	86.14*	---	1962	62306				
		0.10			58.5	24.000	0.100	0.100	1.000	1.400	---	48.40	60.73*	---	71.93*	---	1962	62306				
		0.10			58.5	24.000	0.100	0.100	0.500	0.770	---	54.40	48.22*	---	59.87*	---	1962	62306				
																	90.6/15.0					
T87	S	0.10	R. T.	L-T	58.5	30.000	0.100	0.100	18.000	19.700	---	12.50	86.70	---	97.03	---	1962	62306				
T87	S	0.10	R. T.	L-T	58.5	36.000	0.100	0.100	4.000	5.450	---	34.00	85.88	---	100.91	---	1962	62306				
T87	S	0.10	R. T.	L-T	58.5	48.000	0.100	0.100	4.000	5.580	---	34.90	87.86	---	104.19	---	1962	62306				
		0.10			58.5	48.000	0.100	0.100	12.000	13.050	---	23.20	104.79	---	120.17	---	1962	62306				
		0.10			58.5	48.000	0.100	0.100	36.000	37.170	---	7.90	96.03	---	102.47	---	1962	62306				
		0.10			58.5	48.000	0.100	0.100	41.900	43.180	---	4.30	78.34	---	89.35	---	1962	62306				
		0.10			58.5	48.000	0.100	0.100	24.000	25.720	---	15.40	112.45	---	119.93	---	1962	62306				
		0.10			58.5	48.000	0.100	0.100	8.000	9.250	---	28.20	101.71	---	110.02	---	1962	62306				
		0.10			58.5	48.000	0.100	0.100	12.000	14.200	---	24.50	110.66	---	122.38	---	1962	62306				
																	98.8/12.4					
																	109.8/12.1					

## BUCKLING OF CRACK EDGES NOT RESTRAINED

T87	S	0.03	- 423	L-T	74.0	12.000	0.032	1.210	2.020	---	48.10	66.73	---	87.21	---	1966	66103
T87	S	0.03	- 423	L-T	74.0	16.000	0.032	4.240	7.030	---	27.80	75.02	---	105.20	---	1966	66103
T87	S	0.12	- 423	L-T	74.0	12.000	0.125	1.230	1.940	---	46.20	64.64	---	81.97	---	1966	66103
T87	S	0.12	- 423	L-T	74.0	16.000	0.125	4.830	6.310	---	26.90	78.55	---	93.86	---	1966	66103
T87	S	0.06	R. T.	L-T	59.2	2.000	0.065	0.625	1.110	---	38.10	40.16*	---	62.72*	---	1973	86213
		0.06			59.2	2.000	0.064	0.622	0.810	---	38.10	40.08*	---	47.92*	---	1973	86213

\*NOTE- NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STD. DEV.

Table 7.10.2.2 (Con't)

CONDITION	--PRODUCT--			TEST SPEC OR THICK TEMP (IN) (F)	ALUMINUM			2219			K(C)			K(C)			
	FORM	THICK (IN)	YIELD STR (KSI)		---SPECIMEN---			CRACK LENGTH CROSS STRESS			K(APP) STAN			K(C) STAN			
					W	WIDTH (IN)	THICK (IN)	INIT (IN)	FINAL (IN)	ONSET (KSI)	MAX (KSI)	K(APP) (KSI*SQRT IN)	MEAN DEV	K(C) (KSI*SQRT IN)	MEAN DEV	REFER	
BUCKLING OF CRACK EDGES NOT RESTRAINED																	
T87	S	0 06	R T	L-T	59.2	2.000	0.064	0.623	0.880	---	37.80	39.76*	50.63*	1973	86213		
		0 06			59.2	2.000	0.064	0.609	0.940	---	38.70	40.13*	54.68*	1973	86213		
		0 06			59.2	2.000	0.064	0.625	1.080	---	37.80	39.84*	60.54*	1973	86213		
T87	S	0 06	R T	L-T	57.7	15.930	0.061	5.000	6.280	---	22.80	68.08	79.36	1966	69759		
		0 06	R T	L-T	57.7	16.290	0.062	5.000	6.360	---	21.50	64.01	75.15	1966	69759		
T87	S	0 06			57.7	16.290	0.062	4.980	5.910	---	23.10	68.60	66.3/ 3.2	75.4/ 1.1	1966	69759	
T87	S	0 12	R T	L-T	58.1	2.990	0.125	0.993	1.250	---	36.40	48.79*	57.31*	1973	86213		
		0 12			58.1	2.990	0.126	0.995	1.300	---	35.90	48.18*	58.25*	1973	86213		
		0 12			58.1	2.990	0.126	0.992	1.250	---	36.30	48.66*	57.15*	1973	86213		
		0 12			54.7	3.000	0.125	1.090	1.820	---	32.50	46.36*	72.20*	1973	86213		
		0 12			54.7	3.000	0.125	1.080	1.800	---	32.50	46.07*	71.28*	1973	86213		
		0 12			58.1	3.000	0.125	0.992	1.200	---	36.20	48.50*	55.28*	1973	86213		
T87	P	0 25	R T	L-T	57.6	3.000	0.247	1.000	1.680	---	34.30	46.19*	69.79*	1973	86213		
		0 25			57.6	3.000	0.247	1.160	1.790	---	31.40	46.77*	68.43*	1973	86213		
		0 25			57.6	3.000	0.247	1.257	2.060	---	29.70	46.89*	77.72*	1973	86213		
		0 25			57.6	3.000	0.247	1.130	1.900	---	32.10	46.94*	75.14*	1973	86213		
T87	P	0 25	R T	L-T	56.0	4.000	0.244	1.330	2.250	---	32.40	50.30*	76.47*	1973	86213		
		0 25			56.0	4.000	0.245	1.430	2.370	---	31.00	50.50*	85.35*	1973	86213		
		0 25			56.0	4.000	0.246	1.330	2.260	---	32.20	49.99*	76.39*	1973	86213		
		0 25			57.6	4.000	0.246	1.330	2.030	---	34.40	53.41*	73.49*	1973	86213		
		0 25			57.6	4.000	0.246	1.330	2.250	---	34.10	52.94*	80.49*	1973	86213		
		0 25			57.6	4.000	0.247	1.410	2.310	---	33.20	53.57*	80.58*	1973	86213		
		0 25			56.0	4.000	0.256	1.330	2.160	---	32.70	49.84*	72.71*	1973	86213		
		0 25			56.0	4.000	0.255	1.440	2.470	---	30.90	50.58*	80.95*	1973	86213		
T87	S	0 25			56.0	4.000	0.255	1.330	2.180	---	32.40	50.30*	74.06*	1973	86213		
		0 06	R T	T-L	59.0	2.000	0.064	0.623	0.900	---	36.10	37.97*	49.22*	1973	86213		
		0 06			59.0	2.000	0.064	0.625	0.960	---	36.70	38.68*	52.78*	1973	86213		
		0 06			59.0	2.000	0.064	0.619	0.880	---	37.40	39.18*	50.09*	1973	86213		
		0 06			59.0	2.000	0.064	0.622	0.870	---	36.50	38.39*	48.45*	1973	86213		

\*NOTE- NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STD. DEV.

Table 7.10.2.2 (Con't)

CONDITION	--PRODUCT--		TEST SPEC OR THICK TEMP OR (IN) (F)	YIELD STR (KSI)	ALUMINUM				2219				K(C)				K(C) STAN MEAN DEV (KBI*8ORT IN)	K(C) STAN MEAN DEV (KBI*8ORT IN)	DATE REFER
	FORM	THICK (IN)			---SPECIMEN---		CRACK		LENGTH (IN)	CROSS (IN)	STRESS (KSI)	MAX (KBI)	ONSET (IN)	K(APP) (KBI*8ORT IN)	STAN MEAN DEV (KBI*8ORT IN)				
					WIDTH (IN)	THICK (IN)	INIT (IN)	FINAL (IN)											
						W	B	2A(O)	2A(F)	B(O)	B(MAX)								
BUCKLING OF CRACK EDGES NOT RESTRAINED																			
T87	S	0.06	R.T.	T-L	59.0	2.000	0.064	0.625	0.980	---	36.50	38.47*	53.44*				1973 86213		
T87	S	0.12	R.T.	T-L	58.6	2.990	0.126	0.990	1.300	---	33.90	45.38*	55.00*				1973 86213		
		0.12			58.6	2.990	0.126	0.994	1.280	---	34.10	45.77*	54.67*				1973 86213		
		0.12			58.6	2.990	0.126	0.991	1.280	---	33.90	45.38*	54.35*				1973 86213		
		0.12			58.6	2.990	0.126	0.992	1.350	---	34.30	45.98*	57.34*				1973 86213		
		0.12			55.9	3.000	0.124	1.070	1.760	---	30.60	43.10*	65.43*				1973 86213		
		0.12			55.9	3.000	0.124	1.080	1.690	---	30.50	43.23*	62.44*				1973 86213		
T87	P	0.25	R.T.	T-L	57.2	3.000	0.247	1.000	1.530	---	32.00	43.10*	59.47*				1973 86213		
		0.25			57.2	3.000	0.247	1.160	1.740	---	29.20	43.50*	61.66*				1973 86213		
		0.25					0.247	1.120	1.710	---	30.40	44.18*	63.01*				1973 86213		
T87	P	0.25	R.T.	T-L	55.9	4.000	0.246	1.330	2.120	---	28.60	44.40	63.62*				1973 86213		
		0.25			55.9	4.000	0.246	1.330	2.060	---	28.70	44.56	62.14*				1973 86213		
		0.25			55.9	4.000	0.249	1.460	2.310	---	26.60	43.95	64.56*				1973 86213		
		0.25			57.2	4.000	0.246	1.330	2.040	---	30.80	47.82*	66.08*				1973 86213		
		0.25			57.2	4.000	0.246	1.440	2.170	---	29.00	47.47	65.99*				1973 86213		
		0.25			55.6	4.000	0.255	1.440	2.240	---	27.80	45.50	65.32*				1973 86213		
		0.25			55.6	4.000	0.255	1.330	2.060	---	28.90	44.87	62.57*				1973 86213		
		0.25			55.6	4.000	0.256	1.330	2.070	---	29.00	45.02	63.07*			---/---	1973 86213		

\*NOTE- NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STD. DEV.

TABLE 7.10.3.1

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.10.3.1 INDICATING EFFECT

## OF STRESS RATIO

MATERIAL: ALUMINUM 2219  
 CONDITION: T851  
 ENVIRONMENT: R.T., LAB AIR

DELTA K  
 (KSI\*IN\*\*1/2)

DA/DN (10\*\*-6 IN./CYCLE)

A

B

C

D

R=+0.30

R=+0.50

DELTA K A: 4.29 : .417  
 MIN B: 6.14 :  
 C:  
 D:

2.02

5.00 : .741  
 6.00 : 1.38  
 7.00 : 2.23  
 8.00 : 3.34  
 9.00 : 4.76  
 10.00 : 6.55  
 13.00 : 15.2  
 16.00 : 32.5

2.81  
 4.10  
 6.05  
 9.15  
 36.8

DELTA K A: 19.30 : 71.4  
 MAX B: 15.80 :  
 C:  
 D:

141.

ROOT MEAN SQUARE  
 PERCENT ERROR

9.32

21.19

LIFE 0.0-0.5  
 PREDICTION 0.5-0.8  
 RATIO 0.8-1.25  
 SUMMARY 1.25-2.0  
 (NP/NA) >2.0

CONDITION/HT: T851  
 FORM:  
 SPECIMEN TYPE: CT  
 ORIENTATION:  
 FREQUENCY: 30.00 HZ  
 ENVIRONMENT: R. T., LAB AIR

YIELD STRENGTH:  
 ULT. STRENGTH:  
 SPECIMEN THK: 0.250"  
 SPECIMEN WIDTH: 2.000"  
 REFERENCES:UD010

ALUM.  
 ALLOY

2219

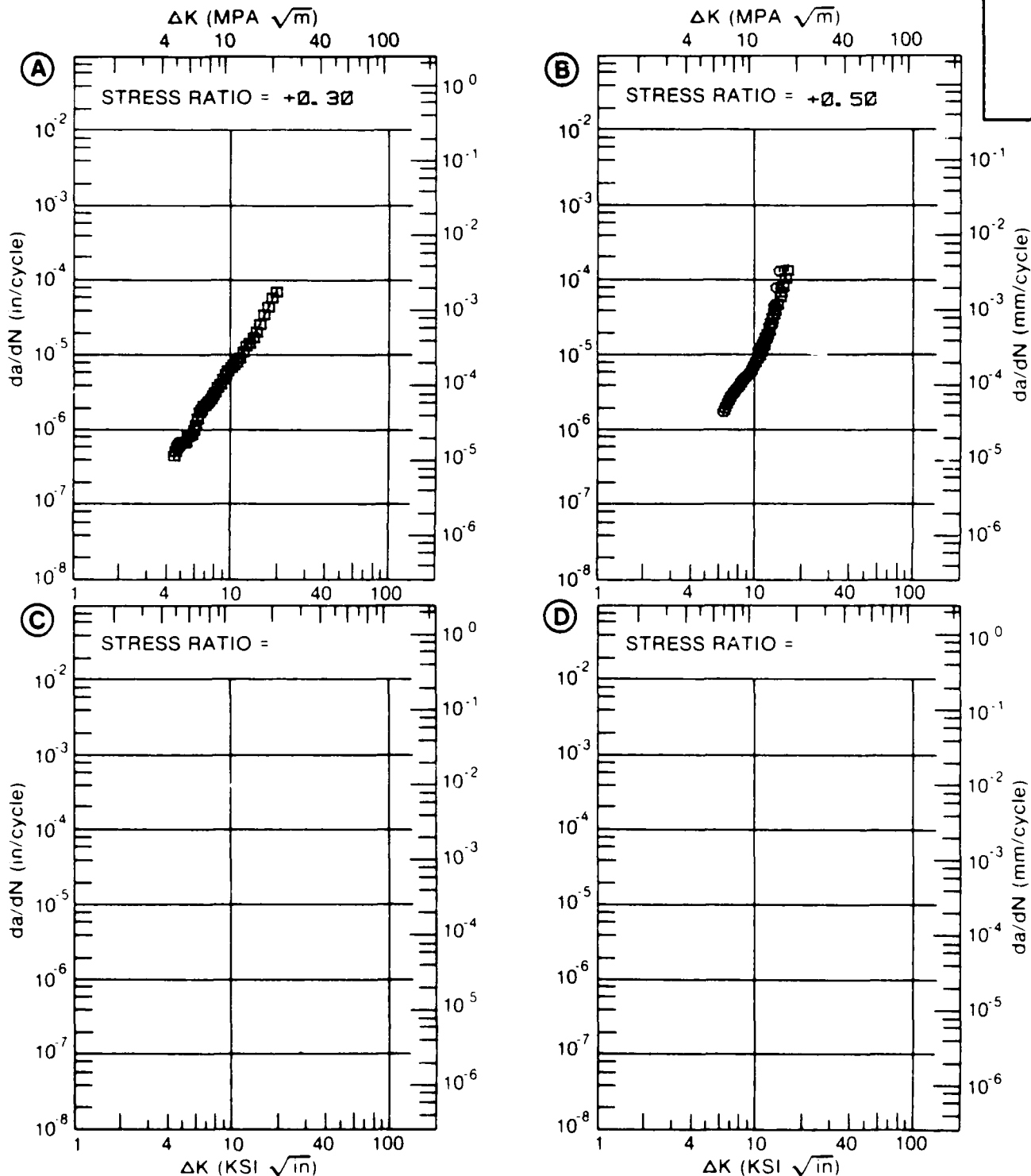


Figure 7.10.3.1



TABLE 7.10.3.2

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTORDATA ASSOCIATED WITH FIGURE 7.10.3.2 INDICATING EFFECT  
OF STRESS RATIO

---

MATERIAL: ALUMINUM 2219  
CONDITION: T851  
ENVIRONMENT: R. T. , LAB AIR

---

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		R=-1.00			
DELTA K MIN	A: 5.84	.966			
	B:				
	C:				
	D:				
	6.00	1.06			
	7.00	1.71			
	8.00	2.44			
	9.00	3.23			
	10.00	4.09			
	13.00	7.45			
DELTA K MAX	16.00	13.1			
	20.00	28.5			
	A: 20.70	32.9			
	B:				
	C:				
	D:				

---

ROOT MEAN SQUARE 7.13  
PERCENT ERROR

---



---

LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25  
SUMMARY 1.25-2.0  
(NP/NA) >2.0

---

CONDITION/HT: T851  
 FORM:  
 SPECIMEN TYPE: CCP  
 ORIENTATION:  
 FREQUENCY: 5.00 HZ  
 ENVIRONMENT: R. T., LAB AIR

YIELD STRENGTH:  
 ULT. STRENGTH:  
 SPECIMEN THK: 0.250"  
 SPECIMEN WIDTH: 3.000"  
 REFERENCES: UD010

ALUM.  
 ALLOY

2219

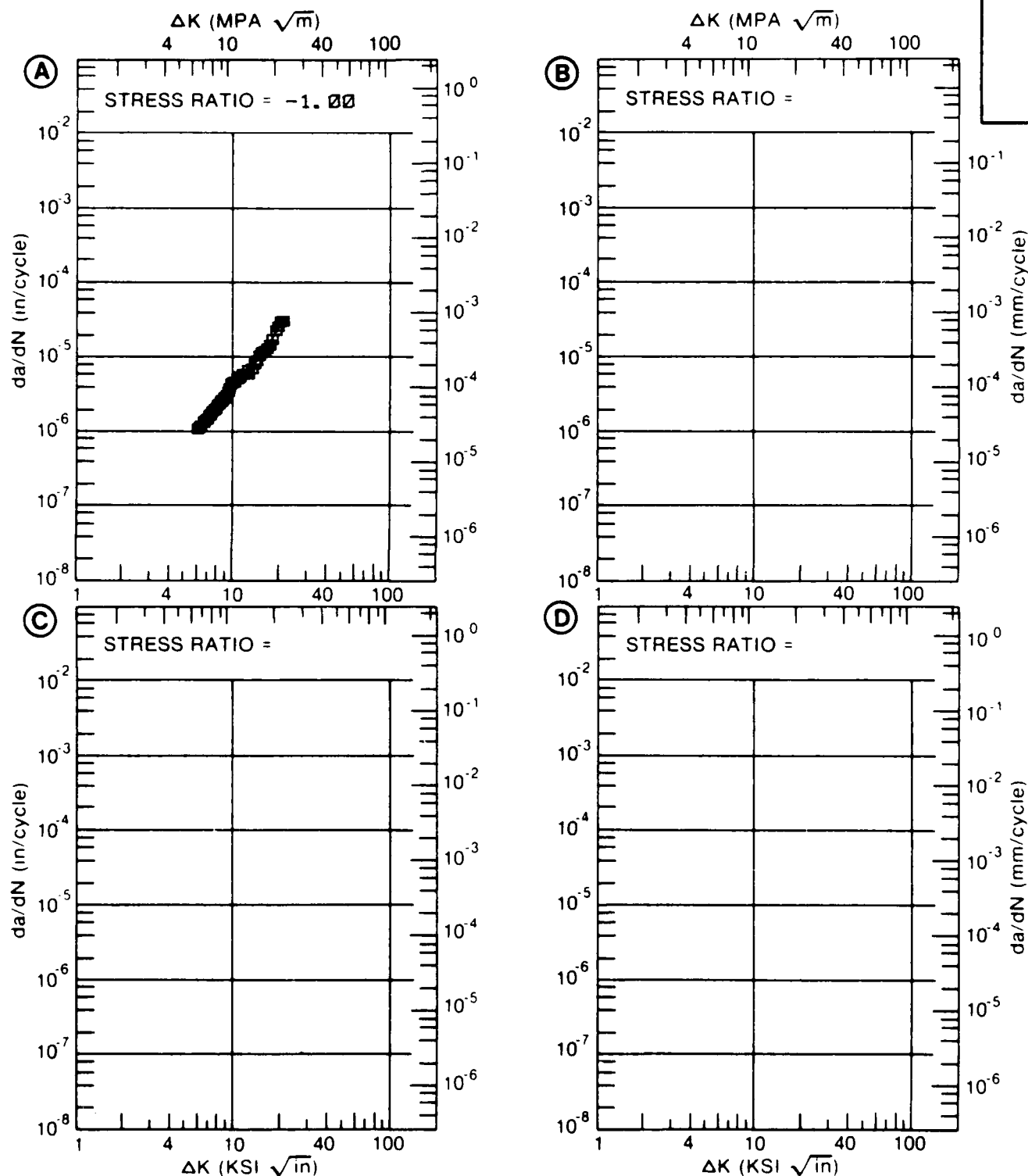


Figure 7.10.3.2

TABLE 7.10.3.3

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTORDATA ASSOCIATED WITH FIGURE 7.10.3.3 INDICATING EFFECT  
OF ENVIRONMENT

MATERIAL: ALUMINUM		2219			
CONDITION: T851					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R. T.			
		LAB AIR			
DELTA K MIN	A: 2.93	.02			
	B: 1				
	C:				
	D:				
	3.00	.0239			
	3.50	.0669			
	4.00	.149			
	5.00	.477			
	6.00	1.09			
	7.00	2.03			
	8.00	3.35			
	9.00	5.10			
	10.00	7.33			
	13.00	17.8			
	16.00	36.9			
DELTA K MAX	A: 19.20	73.3			
	B:				
	C:				
	D:				
ROOT MEAN SQUARE		13.25			
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25	3			
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION/HT: T851  
 FORM:  
 SPECIMEN TYPE: CT  
 ORIENTATION:  
 STRESS RATIO: +0.10  
 FREQUENCY: 5.00 HZ

YIELD STRENGTH:  
 ULT. STRENGTH:  
 SPECIMEN THK: 0.250"  
 SPECIMEN WIDTH: 2.000"  
 REFERENCES:UD010

ALUM.  
 ALLOY

2219

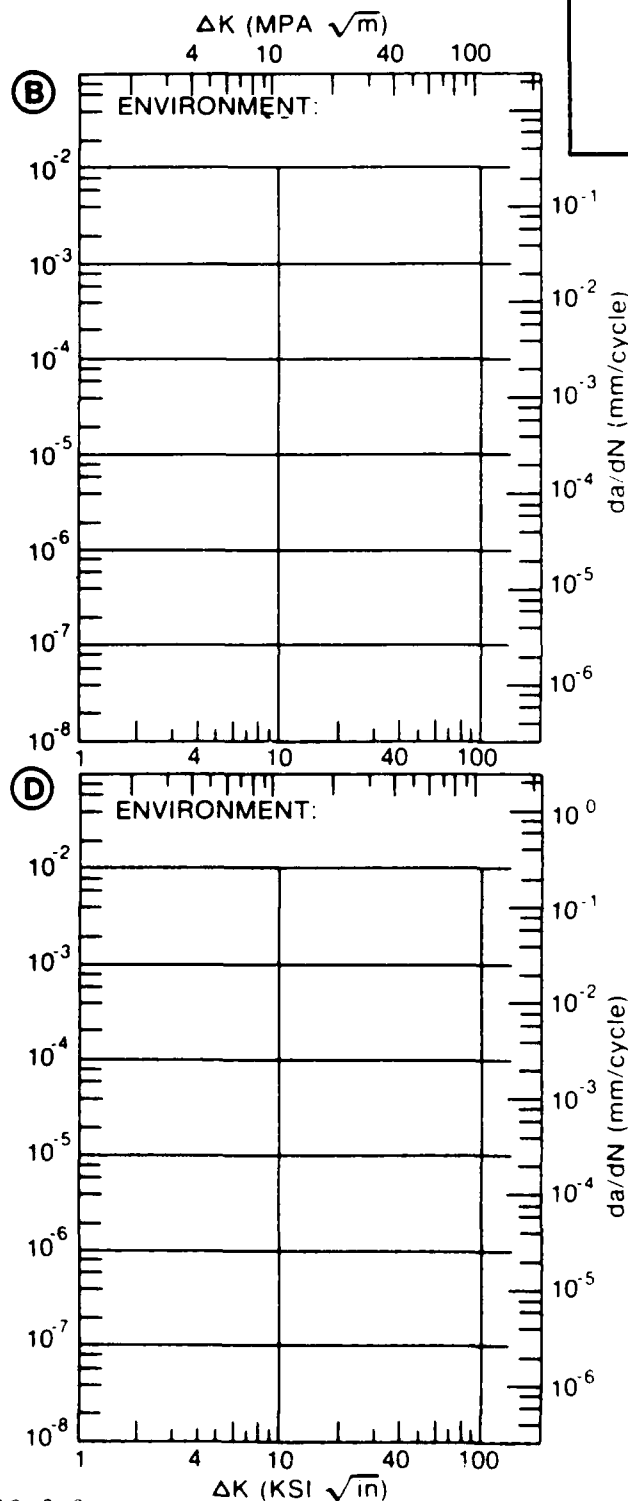
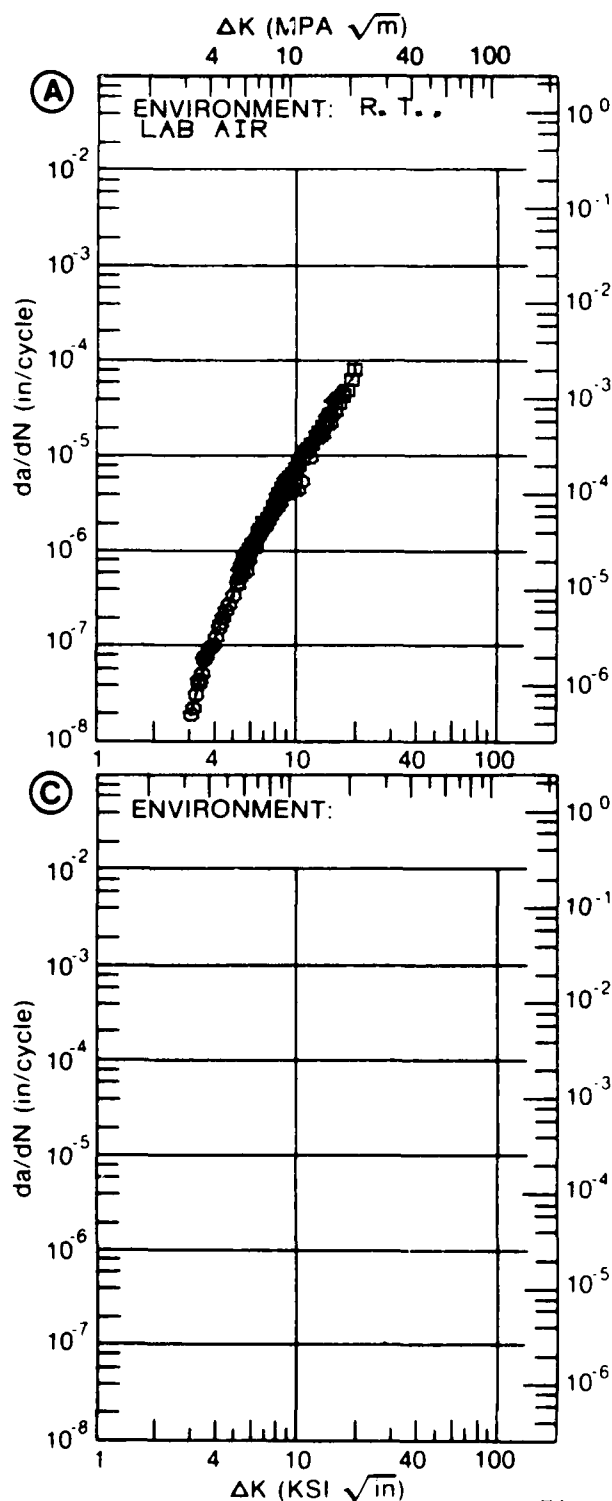


Figure 7.10.3.3

TABLE 7.10.3.4

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.10.3.4 INDICATING EFFECT

## OF FREQUENCY

MATERIAL: ALUMINUM 2219  
CONDITION: T851  
ENVIRONMENT: R. T. , LAB AIR

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		F(HZ)= 0.10 F(HZ)= 5.00			
DELTA K MIN	A: 5.00	2.04			
	B: 2.45		.111		
	C:				
	D:				
	2.50		.122		
	3.00		.245		
	3.50		.429		
	4.00		.762		
	5.00		3.08		
	6.00	7.93			
DELTA K MAX	7.00	50.4			
	A: 7.01	51.9			
	B: 5.01		3.13		
	C:				
	D:				
ROOT MEAN SQUARE		22.21	11.84		
PERCENT ERROR					

LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25  
SUMMARY 1.25-2.0  
(NP/NA) >2.0

CONDITION/HT: T851  
 FORM:  
 SPECIMEN TYPE: CT  
 ORIENTATION:  
 STRESS RATIO: +0.80  
 ENVIRONMENT: R. T., LAB AIR

YIELD STRENGTH:  
 ULT. STRENGTH:  
 SPECIMEN THK: 0.250"  
 SPECIMEN WIDTH: 2.000"  
 REFERENCES:UD010

ALUM.  
 ALLOY

2219

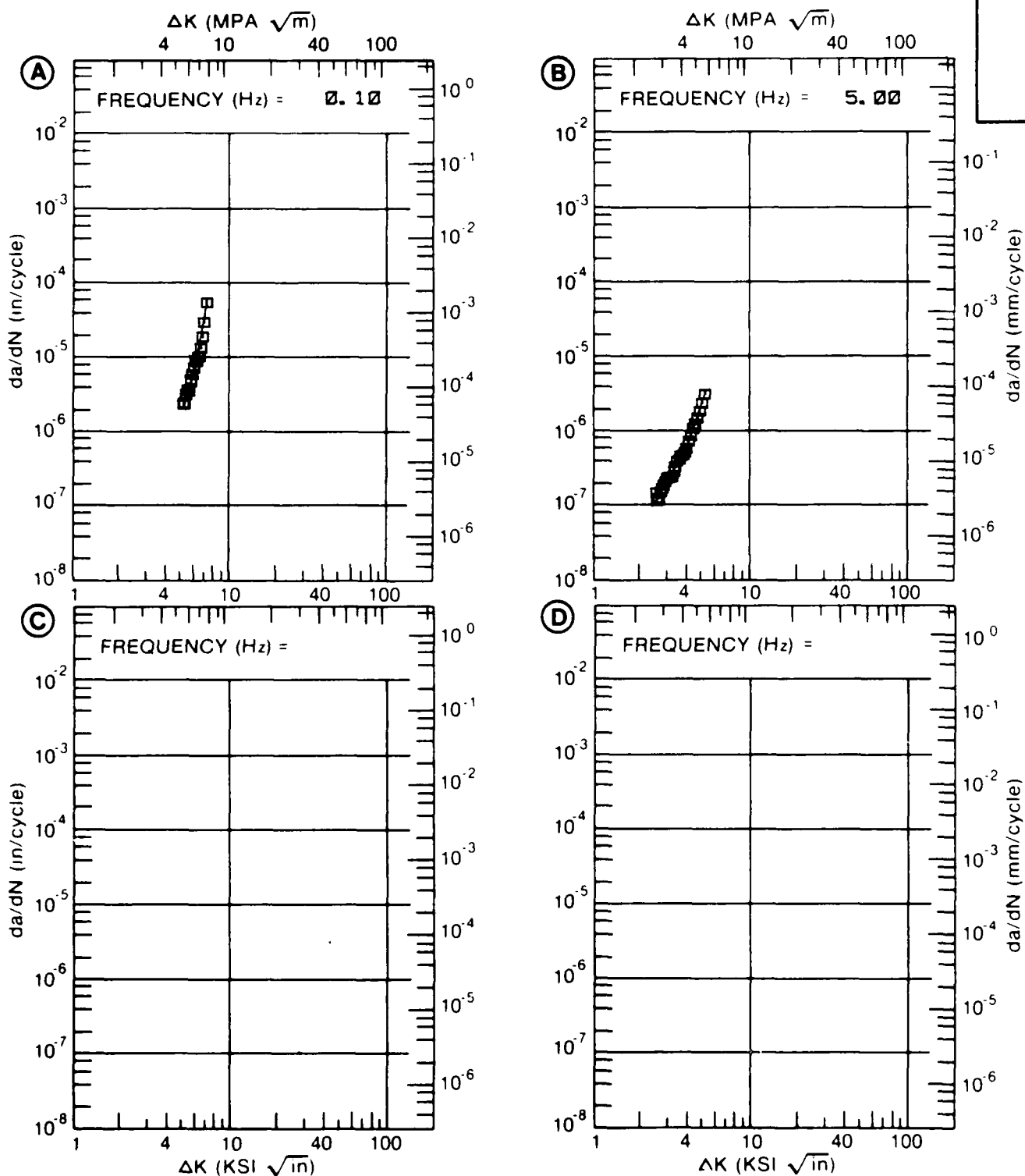


Figure 7.10.3.4

TABLE 7.10.3.5

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.10.3.5 INDICATING EFFECT

OF STRESS RATIO

MATERIAL: ALUMINUM 2219  
CONDITION: T851  
ENVIRONMENT: R. T. , LAB AIR

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		R=-1.00	R=-0.30	R=-0.10	R=+0.00
DELTA K MIN	A: 6.61 :	2.98			
	B: 6.34 :		1.80		
	C: 6.17 :			1.23	
	D: 6.25 :				.791
	7.00 :	2.86	2.37	2.07	1.25
	8.00 :	3.30	3.50	3.36	2.05
	9.00 :	4.61	4.99	4.94	3.08
	10.00 :	6.81	6.88	6.79	4.33
	13.00 :	17.7	15.2	13.9	9.59
	16.00 :		27.6	24.0	17.6
	20.00 :		52.5	44.9	34.6
	25.00 :		107.	93.6	
	30.00 :		214.	193.	
	35.00 :		428.	401.	
	40.00 :		865.	837.	
	50.00 :		3618.	3707.	
	60.00 :			16519.	
DELTA K MAX	A: 14.09 :	21.3			
	B: 59.68 :		14767.		
	C: 63.72 :			28766.	
	D: 23.46 :				58.2
ROOT MEAN SQUARE		18.45	38.38	20.98	4.31
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25	1	2	3	1
SUMMARY	1.25-2.0				
(NP/NA)	>2.0		1		

CONDITION/HT: T851  
 FORM: 0.25" TH PLATE  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T  
 FREQUENCY: 6.00 HZ  
 ENVIRONMENT: R.T., LAB AIR

YIELD STRENGTH: 46.0 KSI  
 ULT. STRENGTH: 62.0 KSI  
 SPECIMEN THK: 0.250"  
 SPECIMEN WIDTH: 6.000"  
 REFERENCES: R1003

ALUM.  
 ALLOY

2219

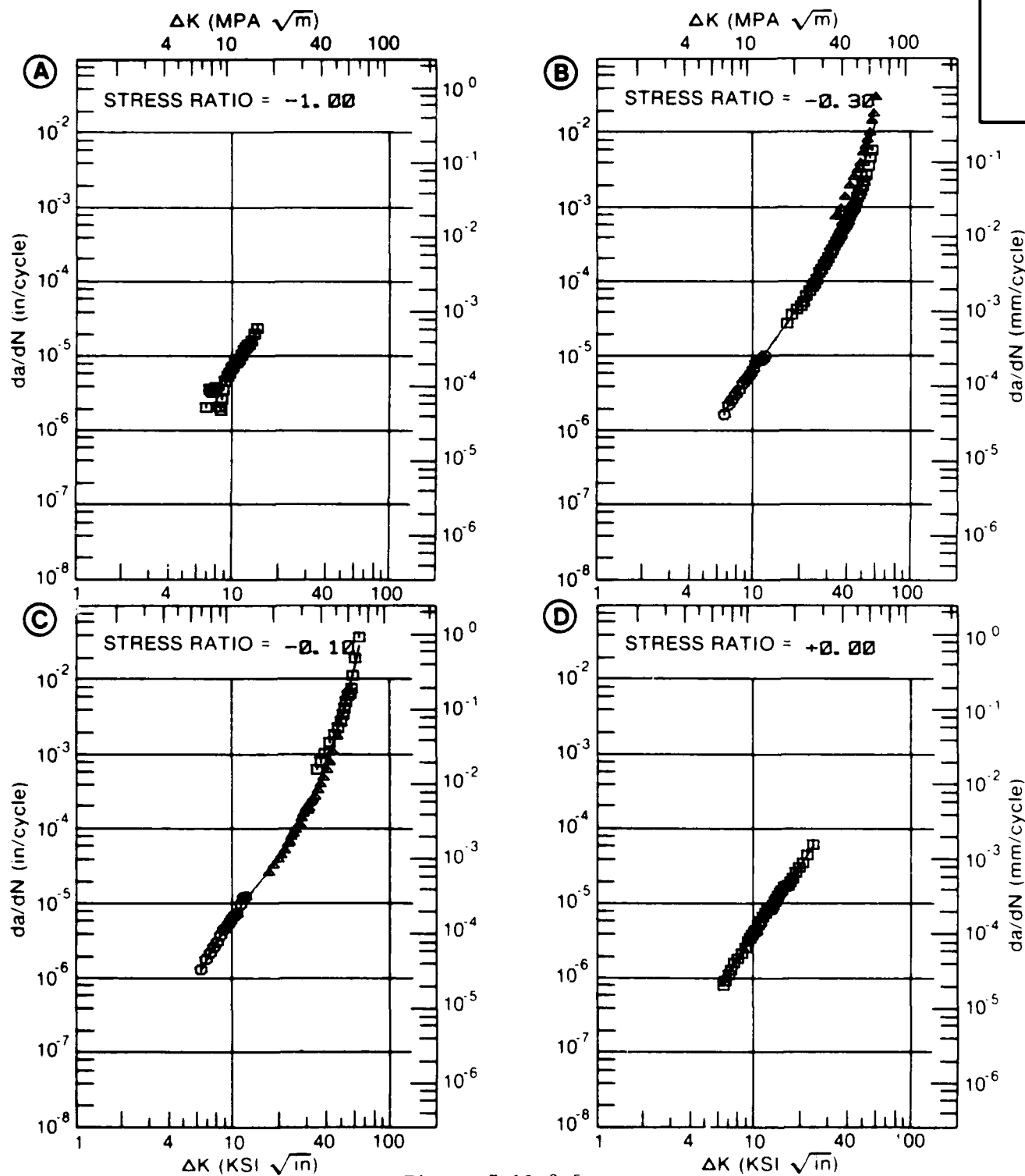


Figure 7.10.3.5

7.10-27



TABLE 7.10.3.6

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.10.3.6 INDICATING EFFECT

OF STRESS RATIO

MATERIAL: ALUMINUM 2219  
CONDITION: T851  
ENVIRONMENT: R. T. / LAB AIR

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A R=+0.01	B R=+0.20	C R=+0.30	D R=+0.70
DELTA K MIN	A: 15.91	24.3			
	B: 14.07		25.9		
	C: 3.99			332	
	D: 4.65				977
	4.00			334	
	5.00			698	1.39
	6.00			1.33	2.59
	7.00			2.32	3.94
	8.00			3.73	6.02
	9.00			5.56	10.1
	10.00			7.86	17.8
	13.00			18.2	60.1
	16.00	24.7	42.1	35.5	144.
	20.00	46.2	90.9	76.3	1174.
	25.00	95.0	196.	179.	
	30.00	185.	392.	392.	
	35.00	344.	771.	824.	
	40.00	614.	1523.		
	50.00	1788.			
DELTA K MAX	A: 50.85	1949.			
	B: 44.27		2745.		
	C: 35.53			890.	
	D: 20.24				1827.
ROOT MEAN SQUARE		9.45	9.18	16.06	24.37
PERCENT ERROR					

LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25	3	1	3	2
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION/HT: T851  
 FORM: 0.25" TH PLATE  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T  
 FREQUENCY: 6.00 HZ  
 ENVIRONMENT: R.T., LAB AIR

YIELD STRENGTH: 46.0 KSI  
 ULT. STRENGTH: 62.0 KSI  
 SPECIMEN THK: 0.250"  
 SPECIMEN WIDTH: 6.000"  
 REFERENCES: RI003

ALUM.  
 ALLOY

2219

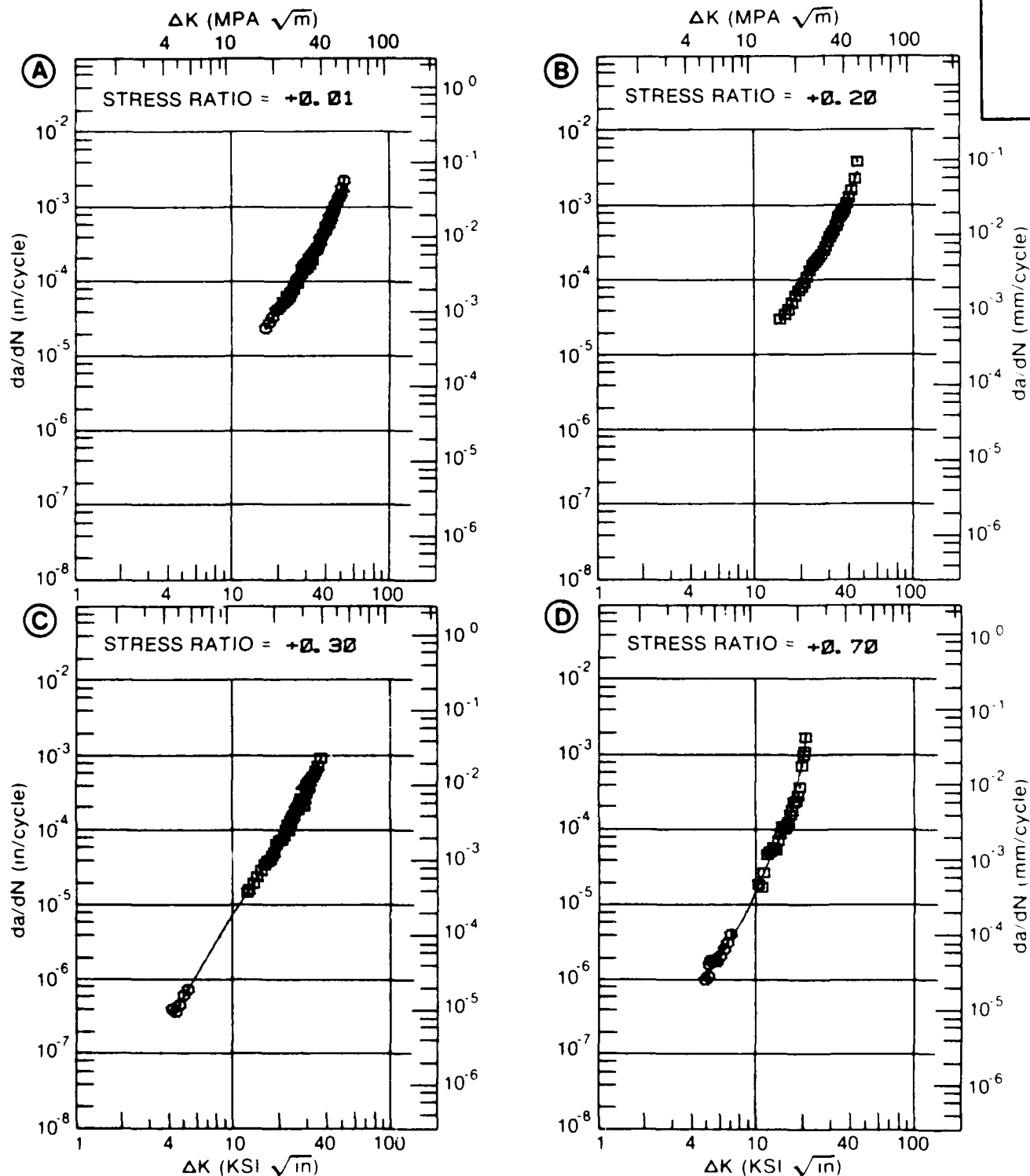


Figure 7.10.3.6

TABLE 7.10.3.7

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.10.3.7 INDICATING EFFECT  
OF ENVIRONMENT

MATERIAL: ALUMINUM 2219  
CONDITION: T851

DELTA K  
(KSI\*IN\*\*1/2)

DA/DN (10\*\*-6 IN./CYCLE)

A

B

C

D

E= R. T.  
LAB AIR

DELTA K A:	14.80	:	15.1
B:		:	
MIN C:		:	
D:		:	
	16.00	:	20.5
	20.00	:	44.5
	25.00	:	89.9
	30.00	:	163.
	35.00	:	287.
	40.00	:	505.
	50.00	:	1622.
DELTA K A:	52.25	:	2126.
B:		:	
MAX C:		:	
D:		:	

ROOT MEAN SQUARE 10.58  
PERCENT ERROR

LIFE	0.0-0.5	
PREDICTION	0.5-0.8	
RATIO	0.8-1.25	1
SUMMARY	1.25-2.0	
(NP/NA)	>2.0	

CONDITION/HT: T851  
 FORM: 0.25" TH PLATE  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T  
 STRESS RATIO: +0.01  
 FREQUENCY: 3.00 HZ

YIELD STRENGTH: 46.0 KSI  
 ULT. STRENGTH: 62.0 KSI  
 SPECIMEN THK: 0.250"  
 SPECIMEN WIDTH: 6.000"  
 REFERENCES: RI003

ALUM.  
 ALLOY

2219

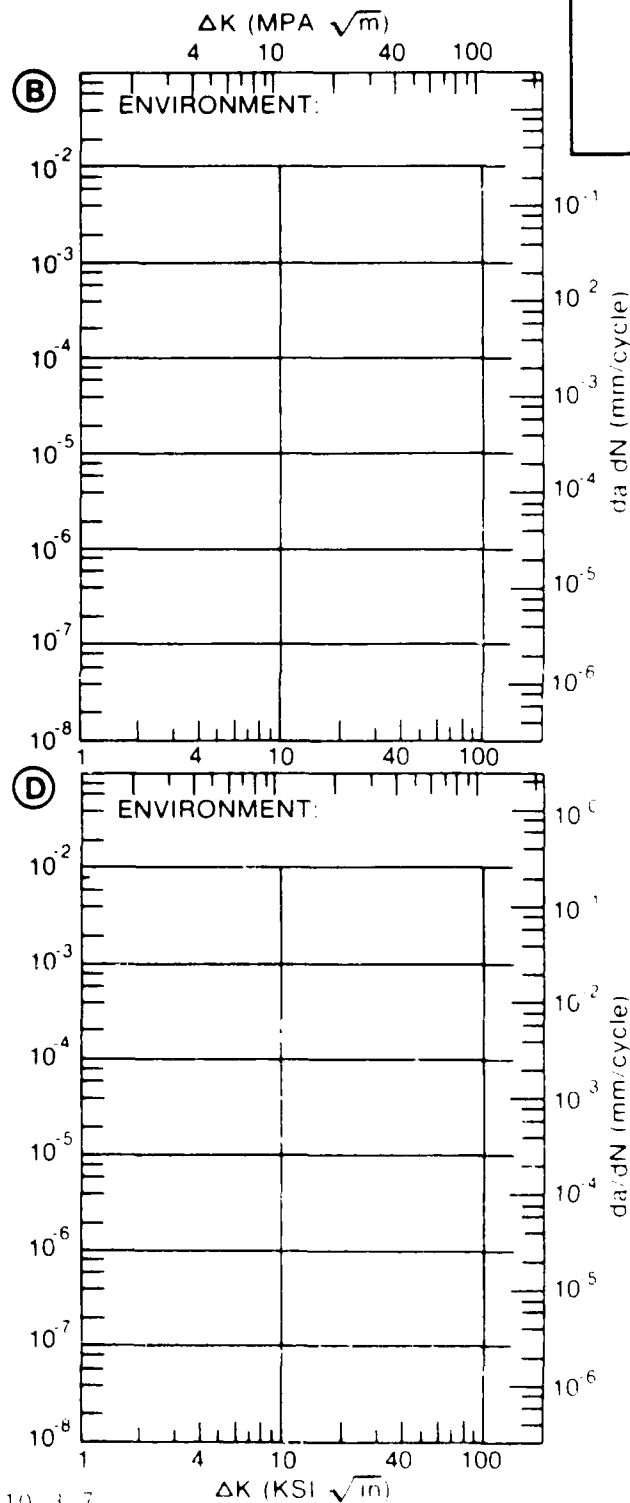
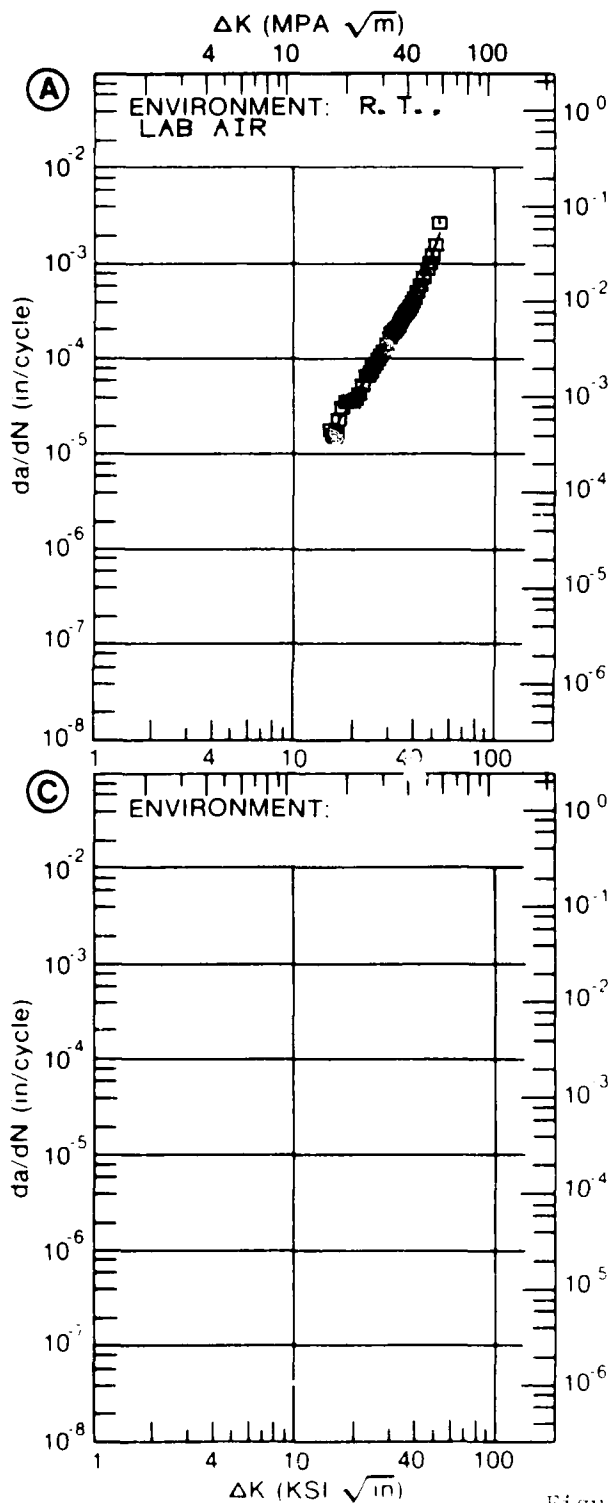


Figure 7.10-3.7

TABLE 7.10.3.8

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.10.3.8 INDICATING EFFECT

## OF STRESS RATIO

MATERIAL: ALUMINUM 2219  
 CONDITION: T851  
 ENVIRONMENT: R. T. , LAB AIR

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		R=-0.10	R=+0.05	R=+0.10	
DELTA K MIN	A: 25.44	90.5			
	B: 8.91		3.55		
	C: 16.46			18.8	
	D:				
	9.00		3.67		
	10.00		5.14		
	13.00		11.5		
	16.00		22.1		
	20.00		48.3	44.9	
	25.00		120.	81.0	
	30.00	230.	185.		
DELTA K MAX	A: 33.66	620.			
	B: 30.18		184.		
	C: 28.06			212.	
	D:				
ROOT MEAN SQUARE PERCENT ERROR		23.46	21.47	27.02	
LIFE	0.0-0.5				
PREDICTION	0.5-0.8			1	
RATIO	0.8-1.25		1		
SUMMARY	1.25-2.0	1			
(NP/NA)	>2.0				

CONDITION/HT: T851  
 FORM: 0.83" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 FREQUENCY: 1.00-20.00 HZ  
 ENVIRONMENT: R.T., LAB AIR

YIELD STRENGTH: 54.7 KSI  
 ULT. STRENGTH: 66.9 KSI  
 SPECIMEN THK: 0.250"  
 SPECIMEN WIDTH: 2.500"  
 REFERENCES: 88468

ALUM.  
ALLOY

2219

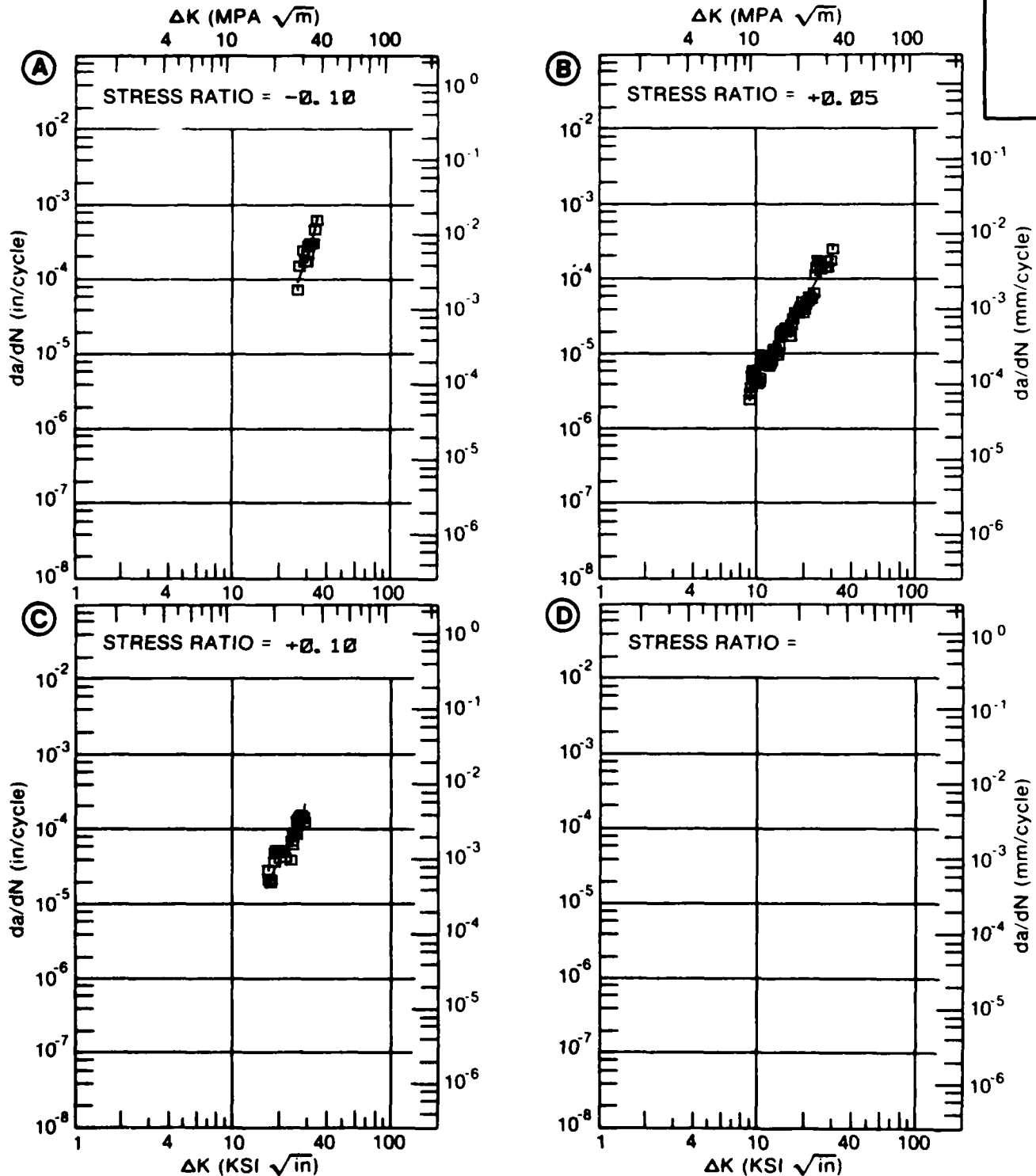


Figure 7.10-3.8

TABLE 7.10+3.9

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.10.3.9 INDICATING EFFECT

## OF STRESS RATIO

MATERIAL: ALUMINUM		2219			
CONDITION: T851					
ENVIRONMENT: R. T. , LAB AIR					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		R=-1.00	R=+0.04	R=+0.05	R=+0.30
DELTA K MIN	A: 7.34	1.68			
	B: 7.42		.41		
	C: 8.55			.79	
	D:				
	8.00	2.50	1.01		
	9.00	4.04	2.57	1.18	
	10.00	5.92	4.24	2.46	
	13.00	13.6		9.40	
	16.00	25.2		19.1	
	20.00	52.3		33.9	
DELTA K MAX	25.00			57.6	
	30.00			95.9	
	A: 24.44	116.			
	B: 11.28		7.87		
SUMMARY (NP/NA)	C: 33.48			140.	
	D:				
ROOT MEAN SQUARE		16.15	12.09	29.69	0.00
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8	1	1	1	
RATIO	0.8-1.25			1	
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION/HT: T851  
 FORM: 0.63" TH PLATE  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T  
 FREQUENCY: 1.00- 20.00 HZ  
 ENVIRONMENT: R. T., LAB AIR

YIELD STRENGTH: 54.7 KSI  
 ULT. STRENGTH: 66.9 KSI  
 SPECIMEN THK: 0.250- 0.251"  
 SPECIMEN WIDTH: 6.005- 6.070"  
 REFERENCES: 89468

ALUM.  
 ALLOY

2219

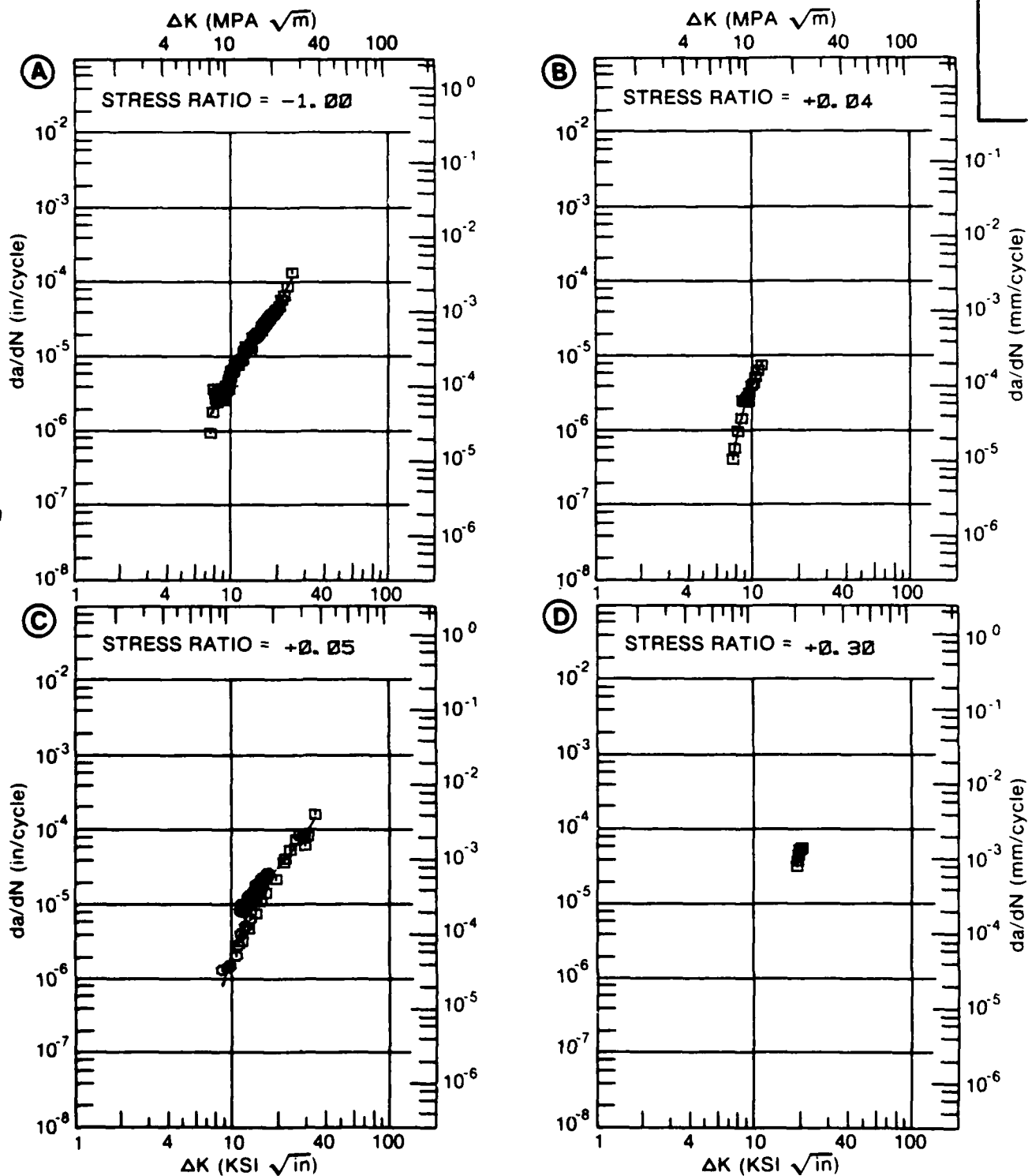


Figure 7.10.3.9



TABLE 7.10.3.10

**FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR**

**DATA ASSOCIATED WITH FIGURE 7.10.3.10 INDICATING EFFECT  
OF STRESS RATIO**

MATERIAL: ALUMINUM 2219  
CONDITION: T851  
ENVIRONMENT: R. T. , LAB AIR

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		R=+0.05			
A:	9.79	3.55			
DELTA K B:					
MIN C:					
D:					
	10.00	3.58			
	13.00	13.2			
A:	15.96	77.1			
DELTA K B:					
MAX C:					
D:					

ROOT MEAN SQUARE 43.42  
PERCENT ERROR

LIFE	0.0-0.5	
PREDICTION	0.5-0.8	1
RATIO	0.8-1.25	
SUMMARY	1.25-2.0	
(NP/NA)	>2.0	

CONDITION/HT: T851  
 FORM: 0.63" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 FREQUENCY: 1.00- 20.00 HZ  
 ENVIRONMENT: R. T., LAB AIR

YIELD STRENGTH: 54.7 KSI  
 ULT. STRENGTH: 66.9 KSI  
 SPECIMEN THK: 0.500"  
 SPECIMEN WIDTH: 2.500"  
 REFERENCES: 88468

ALUM.  
 ALLOY

2219

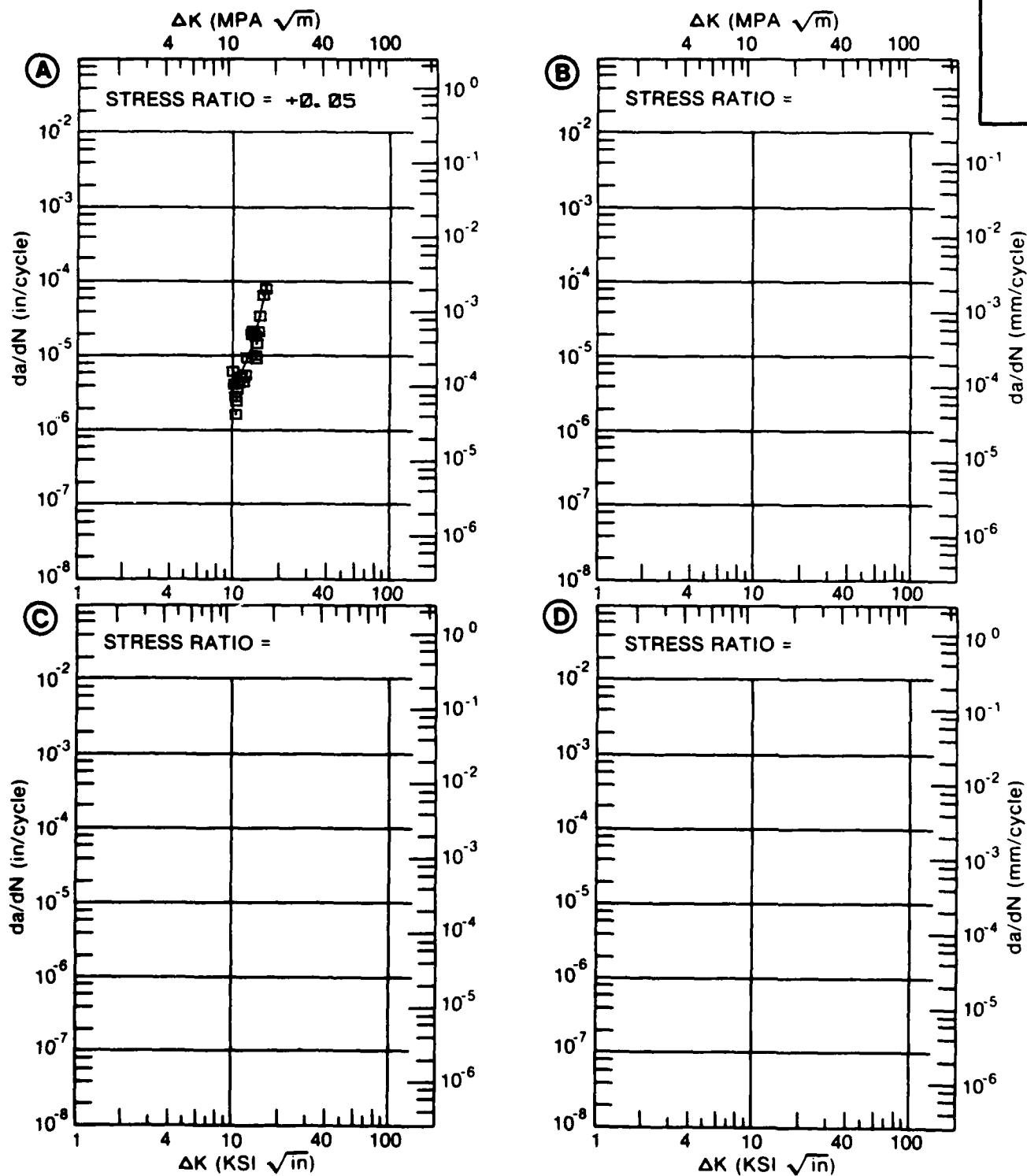


Figure 7.10.3.10

TABLE 7.10.3.11

**FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR**

**DATA ASSOCIATED WITH FIGURE 7.10.3.11 INDICATING EFFECT**

**OF STRESS RATIO**

MATERIAL: ALUMINUM		2219			
CONDITION: T851					
ENVIRONMENT: R. T. , LAB AIR					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		R=+0. 40	R=+0. 50	R=+0. 60	R=+0. 70
DELTA K MIN	A: 13. 87 :	28. 6			
	B: 8. 00 :		4. 62		
	C: 7. 23 :			4. 35	
	D: 6. 44 :				3. 55
	7. 00 :				3. 79
	8. 00 :		4. 62	6. 09	6. 31
	9. 00 :		6. 15	8. 72	11. 6
	10. 00 :		10. 1	12. 2	
	13. 00 :			36. 9	
DELTA K MAX	A: 15. 45 :	44. 3			
	B: 10. 28 :		10. 6		
	C: 14. 98 :			91. 8	
	D: 9. 77 :				16. 7
ROOT MEAN SQUARE		17. 15	10. 21	24. 18	13. 13
PERCENT ERROR					
LIFE	0. 0-0. 5				
PREDICTION	0. 5-0. 8				
RATIO	0. 8-1. 25	1	1	1	1
SUMMARY	1. 25-2. 0				
(NP/NA)	>2. 0				

CONDITION/HT: T851  
 FORM: 0.63" TH PLATE  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T  
 FREQUENCY: 1.00- 20.00 HZ  
 ENVIRONMENT: R. T., LAB AIR

YIELD STRENGTH: 54.7 KSI  
 ULT. STRENGTH: 66.9 KSI  
 SPECIMEN THK: 0.250- 0.251"  
 SPECIMEN WIDTH: 6.005- 6.070"  
 REFERENCES: 88468

ALUM.  
 ALLOY

2219

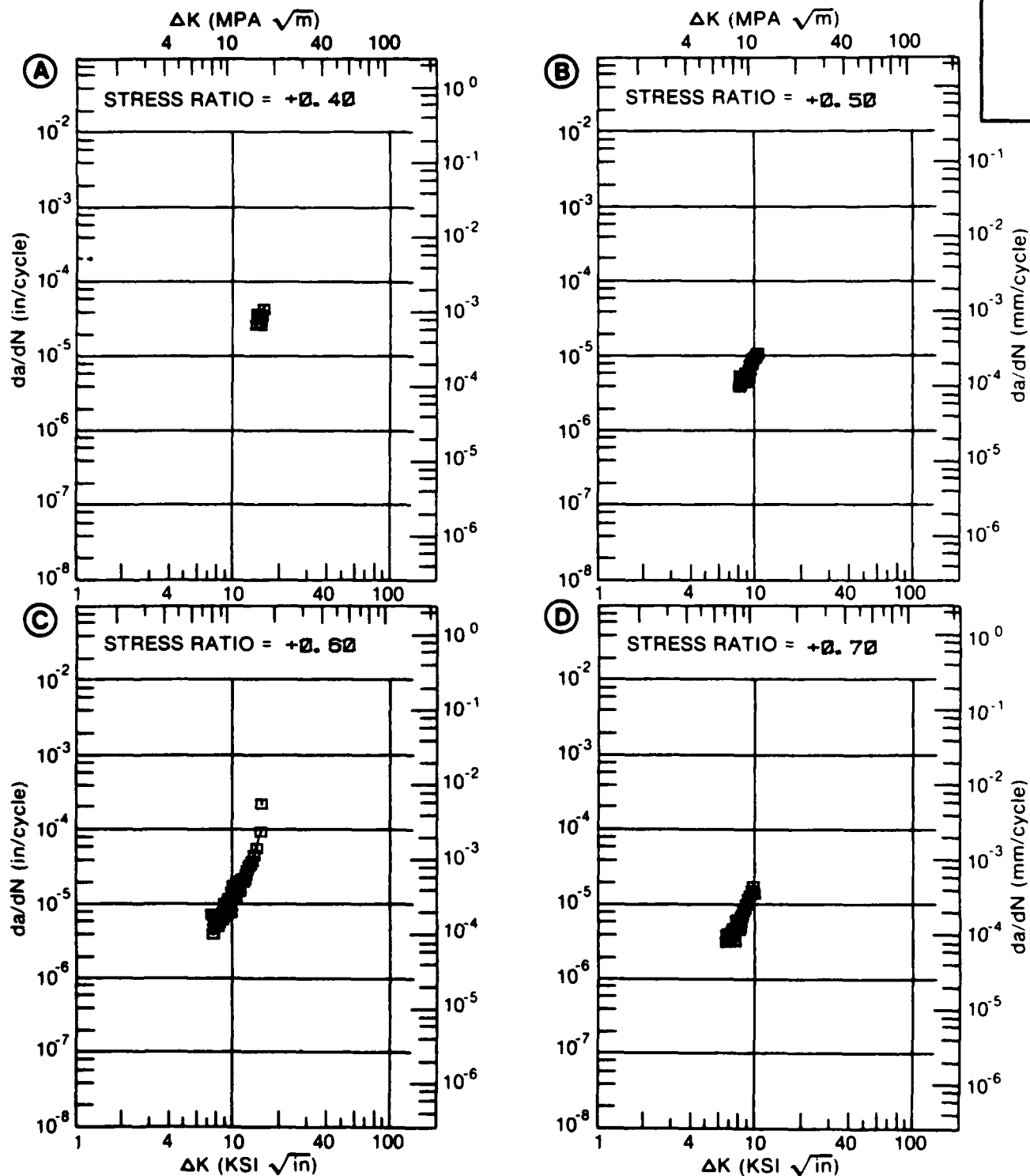


Figure 7.10.3.11

TABLE 7.10.3.12

**FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR**

**DATA ASSOCIATED WITH FIGURE 7.10.3.12 INDICATING EFFECT**

**OF STRESS RATIO**

<b>MATERIAL: ALUMINUM</b>		<b>2219</b>			
<b>CONDITION: T851</b>					
<b>ENVIRONMENT: R. T. , LAB AIR</b>					
<b>DELTA K (KSI*IN**1/2)</b>		<b>DA/DN (10**-6 IN. /CYCLE)</b>			
		<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
		<b>R=-0.50</b>	<b>R=+0.00</b>		
<b>DELTA K MIN</b>	<b>A:</b>	<b>5.96</b>	<b>1.53</b>		
	<b>B:</b>	<b>5.21</b>	<b>.360</b>		
	<b>C:</b>				
	<b>D:</b>				
	<b>6.00</b>	<b>1.59</b>	<b>1.22</b>		
	<b>7.00</b>	<b>3.08</b>	<b>2.67</b>		
	<b>8.00</b>	<b>4.48</b>	<b>4.19</b>		
	<b>9.00</b>	<b>5.71</b>	<b>6.02</b>		
	<b>10.00</b>	<b>6.89</b>	<b>8.25</b>		
	<b>13.00</b>	<b>12.6</b>	<b>17.5</b>		
	<b>16.00</b>		<b>30.8</b>		
	<b>20.00</b>		<b>54.8</b>		
<b>DELTA K MAX</b>	<b>A:</b>	<b>15.70</b>	<b>28.1</b>		
	<b>B:</b>	<b>20.85</b>	<b>60.8</b>		
	<b>C:</b>				
	<b>D:</b>				
<b>ROOT MEAN SQUARE PERCENT ERROR</b>		<b>19.95</b>	<b>9.86</b>		
<b>LIFE</b>	<b>0.0-0.5</b>				
<b>PREDICTION</b>	<b>0.5-0.8</b>	<b>1</b>			
<b>RATIO</b>	<b>0.8-1.25</b>	<b>3</b>	<b>6</b>		
<b>SUMMARY</b>	<b>1.25-2.0</b>				
<b>(NP/NA)</b>	<b>&gt;2.0</b>				

CONDITION/HT: T851  
 FORM: 1.38" TH PLATE  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T  
 FREQUENCY: 5.20 HZ  
 ENVIRONMENT: R.T., LAB AIR

YIELD STRENGTH: 50.6 KSI  
 ULT. STRENGTH: 66.4 KSI  
 SPECIMEN THK: 0.748- 0.752"  
 SPECIMEN WIDTH: 2.997- 3.003"  
 REFERENCES: 96213

ALUM.  
 ALLOY

2219

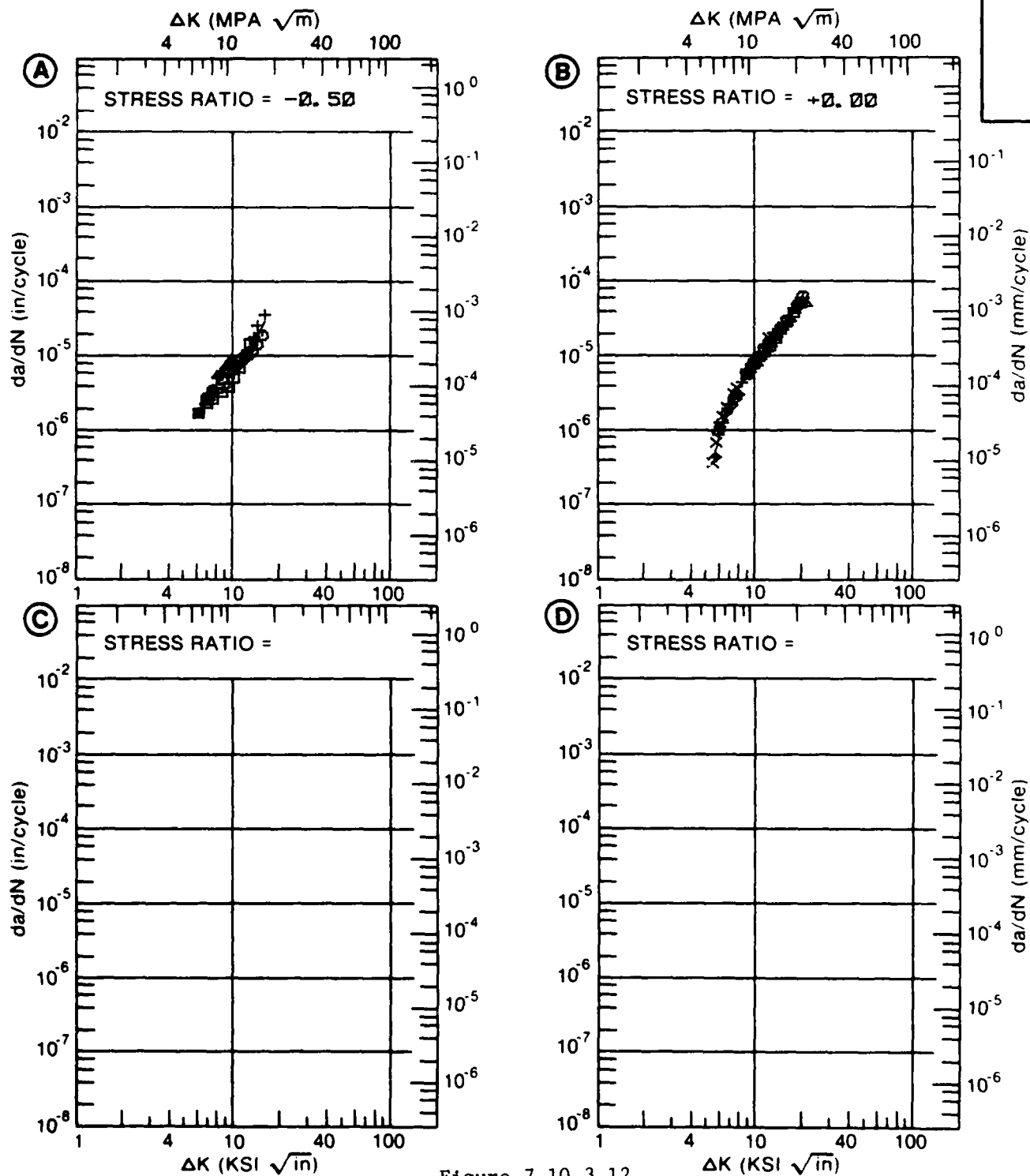


Figure 7.10.3.12

TABLE 7.10.3.13

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.10.3.13 INDICATING EFFECT

## OF STRESS RATIO

MATERIAL: ALUMINUM		2219			
CONDITION: T851					
ENVIRONMENT: R. T. , L. H. A.					
DELTA K (KSI*IN**1/2)		DA/DN (10**+6 IN. /CYCLE)			
		A	B	C	D
		R=+0.08	R=+0.30		
DELTA K MIN	A: 3.83	.232			
	B: 4.70		.673		
	C:				
	D:				
	4.00	.243			
	5.00	.407	.907		
	6.00	.779	1.84		
	7.00	1.40	3.11		
	8.00	2.25	5.19		
	9.00	3.36	9.20		
DELTA K MAX	10.00	4.77			
	13.00	11.2			
	16.00	22.6			
	A: 16.51	25.2			
	B: 9.78		15.2		
	C:				
	D:				
ROOT MEAN SQUARE		9.44	7.15		
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25	1	1		
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION/HT: T851  
 FORM: 1.75" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 FREQUENCY: 6.00 HZ  
 ENVIRONMENT: R. T., L. H. A.

YIELD STRENGTH: 48.0- 49.6 KSI  
 ULT. STRENGTH: 65.9- 66.2 KSI  
 SPECIMEN THK: 0.993- 1.000"  
 SPECIMEN WIDTH: 6.010- 7.400"  
 REFERENCES: 85837

ALUM.  
 ALLOY

2219

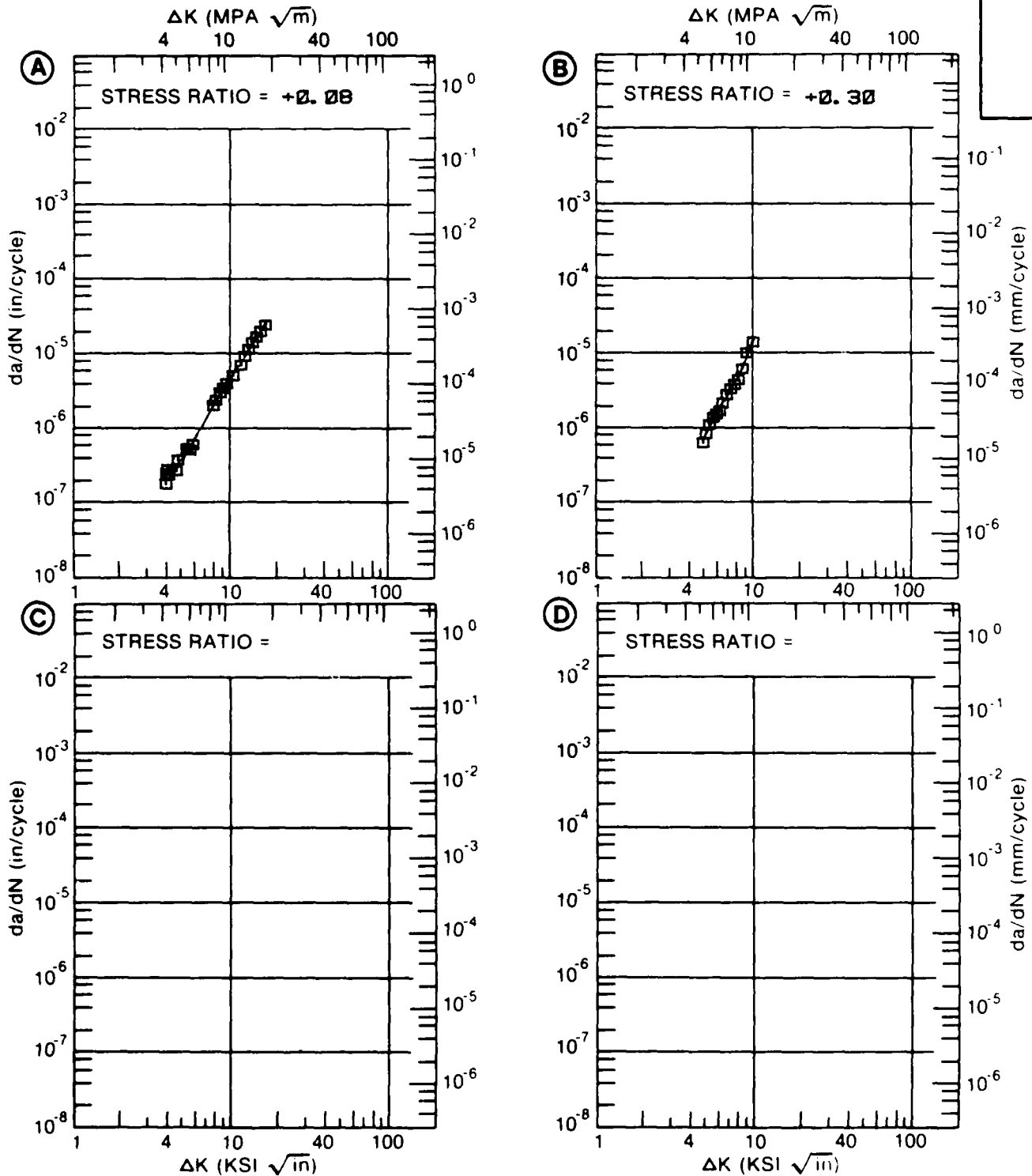


Figure 7.10.3.13



TABLE 7.10.3.14

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.10.3.14 INDICATING EFFECT  
OF STRESS RATIO

MATERIAL: ALUMINUM 2219  
CONDITION: T851  
ENVIRONMENT: R. T. , LAB AIR

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		R=+0.08			
DELTA K MIN	A: 6.98	1.33			
	B:				
	C:				
	D:				
	7.00	1.35			
	8.00	2.41			
	9.00	3.86			
	10.00	5.74			
	13.00	14.6			
DELTA K MAX	A: 15.01	24.3			
	B:				
	C:				
	D:				

ROOT MEAN SQUARE 6.99  
PERCENT ERROR

LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25 1  
SUMMARY 1.25-2.0  
(NP/NA) >2.0

CONDITION/HT: T851  
 FORM: 1.75" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 FREQUENCY: 6.00 HZ  
 ENVIRONMENT: R. T., LAB AIR

YIELD STRENGTH: 50.0 KSI  
 ULT. STRENGTH: 66.0 KSI  
 SPECIMEN THK: 0.995"  
 SPECIMEN WIDTH: 2.000"  
 REFERENCES 85837

ALUM.  
 ALLOY

2219

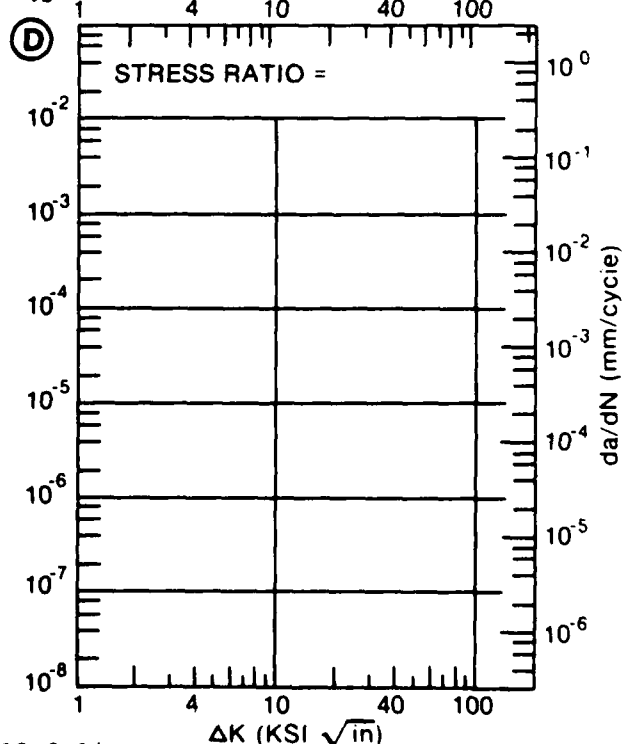
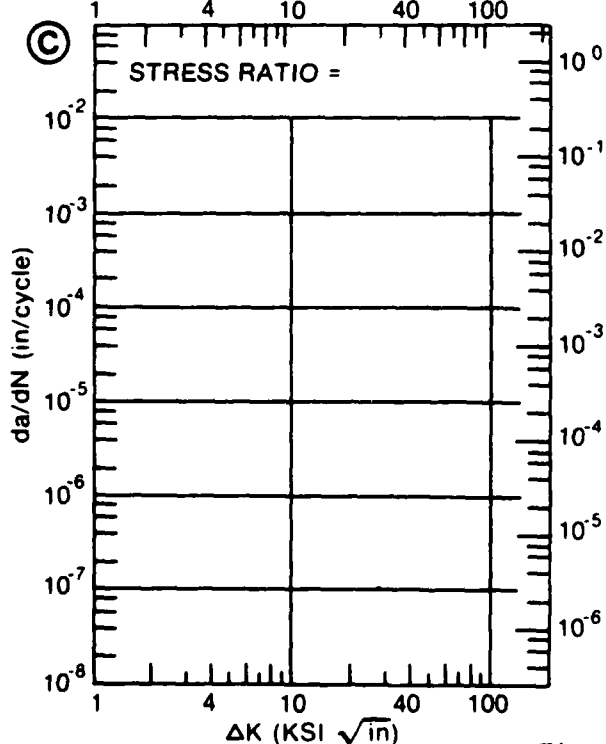
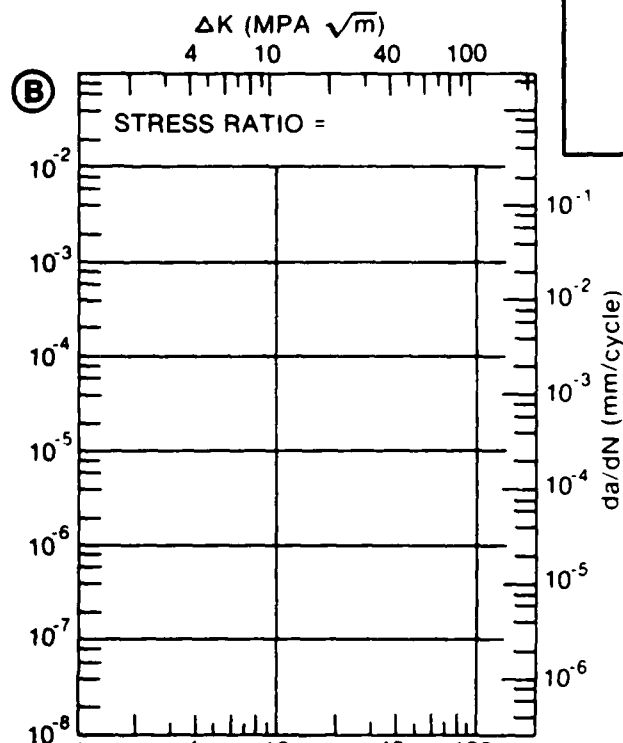
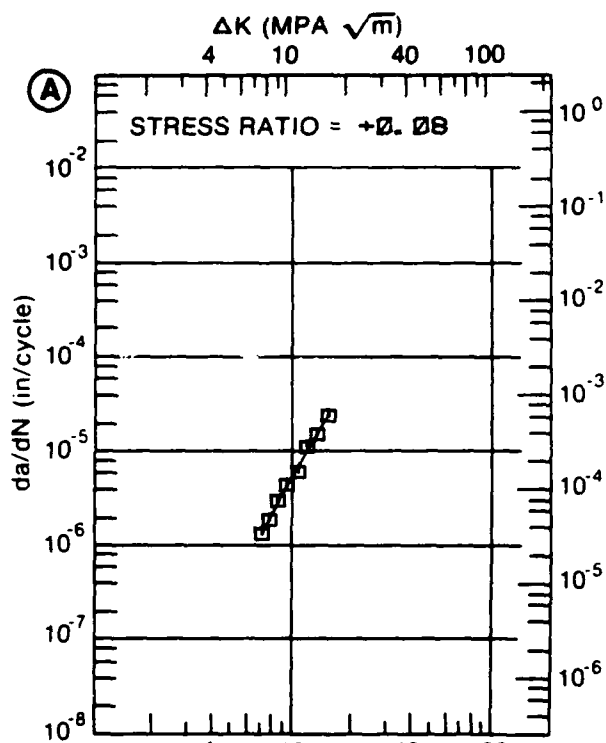


Figure 7.10.3.14

TABLE 7.10.3.15

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.10.3.15 INDICATING EFFECT  
OF STRESS RATIO

MATERIAL: ALUMINUM		2219			
CONDITION: T851					
ENVIRONMENT: R. T. , S. T. W.					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		R=+0.30	R=+0.50		
DELTA K MIN	A:	5.54	.953		
	B:	4.67	.479		
	C:				
	D:				
	5.00		.809		
	6.00	1.33	2.09		
	7.00	2.46	3.88		
	8.00	4.04	6.06		
	9.00	6.10	8.62		
	10.00	8.68	11.6		
	13.00	19.7	25.1		
	16.00	35.7	53.6		
	20.00	65.6			
DELTA K MAX	A:	21.28	77.3		
	B:	16.41	59.7		
	C:				
	D:				
ROOT MEAN SQUARE		5.63	17.56		
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25		1		
SUMMARY	1.25-2.0	1			
(NP/NA)	>2.0				

CONDITION/HT: T851  
 FORM: 1.75" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 FREQUENCY: 1.00 HZ  
 ENVIRONMENT: R. T., S. T. W.

YIELD STRENGTH: 50.0 KSI  
 ULT. STRENGTH: 66.0 KSI  
 SPECIMEN THK: 0.990- 1.000"  
 SPECIMEN WIDTH: 6.000- 6.010"  
 REFERENCES: 98579

ALUM.  
 ALLOY

2219

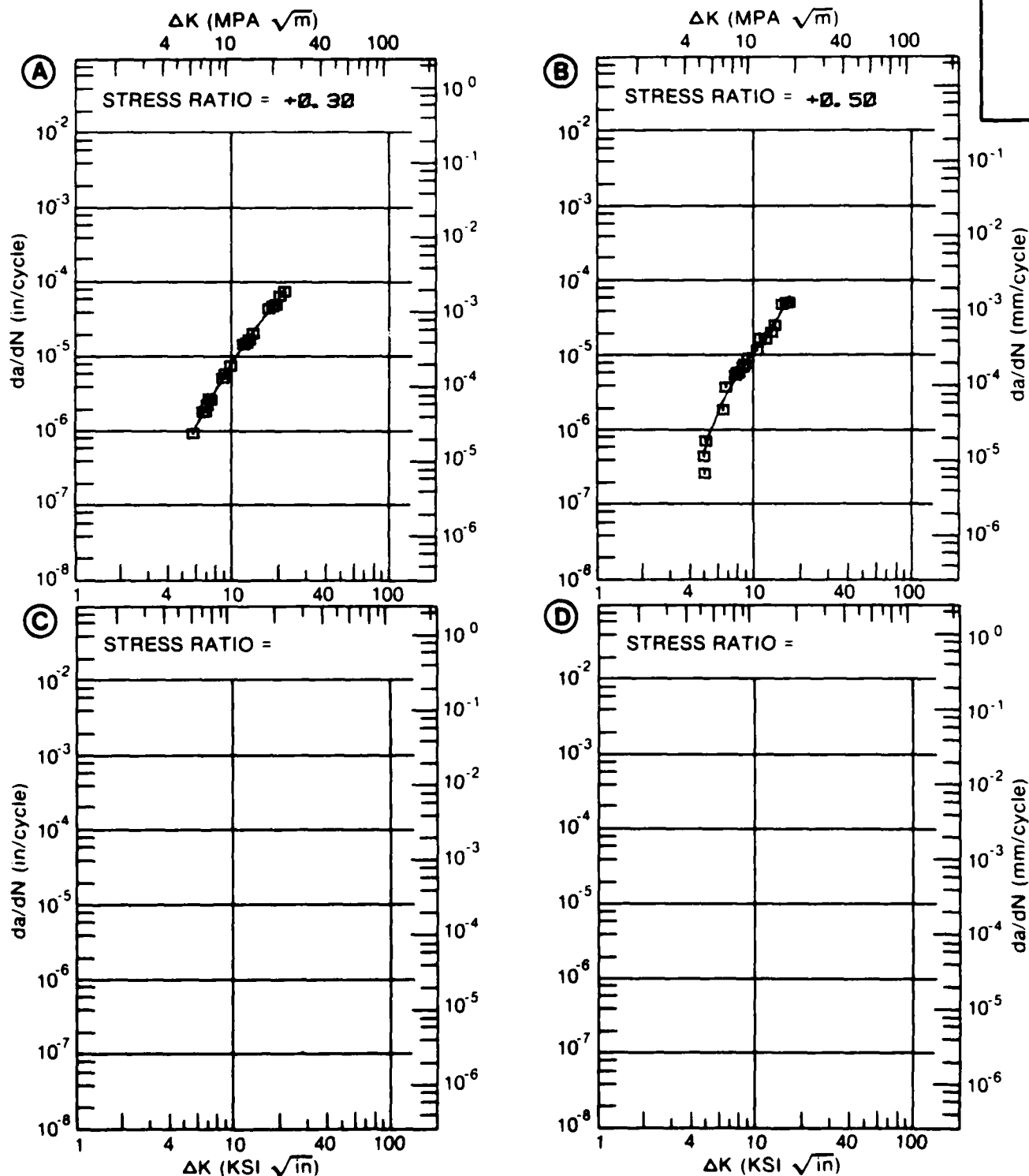


Figure 7.10.3.15

TABLE 7.10.3.16

**FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR**

**DATA ASSOCIATED WITH FIGURE 7.10.3.16 INDICATING EFFECT  
OF ENVIRONMENT**

MATERIAL: ALUMINUM  
CONDITION: TB51

2219

DELTA K  
(KSI\*IN\*\*1/2)

DA/DN (10\*\*-6 IN./CYCLE)

A

B

C

D

E= R. T.

L. H. A.

DELTA K MIN  
A: 6.84 : .622  
B:  
C:  
D:

7.00 : .708  
8.00 : 1.40  
9.00 : 2.34  
10.00 : 3.52  
13.00 : 8.20  
16.00 : 14.5  
20.00 : 26.5  
25.00 : 51.9  
30.00 : 100.  
35.00 : 197.  
40.00 : 393.

DELTA K MAX  
A: 48.41 : 1306.  
B:  
C:  
D:

ROOT MEAN SQUARE 11.38  
PERCENT ERROR

LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25 2  
SUMMARY 1.25-2.0  
(NP/NA) >2.0

CONDITION/HT: T851  
 FORM: 1.75" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 STRESS RATIO: +0.08  
 FREQUENCY: 6.00 HZ

YIELD STRENGTH: 50.0 KSI  
 ULT. STRENGTH: 66.0 KSI  
 SPECIMEN THK: 0.250- 0.500"  
 SPECIMEN WIDTH: 5.990- 6.000"  
 REFERENCES: 88579

ALUM.  
 ALLOY

2219

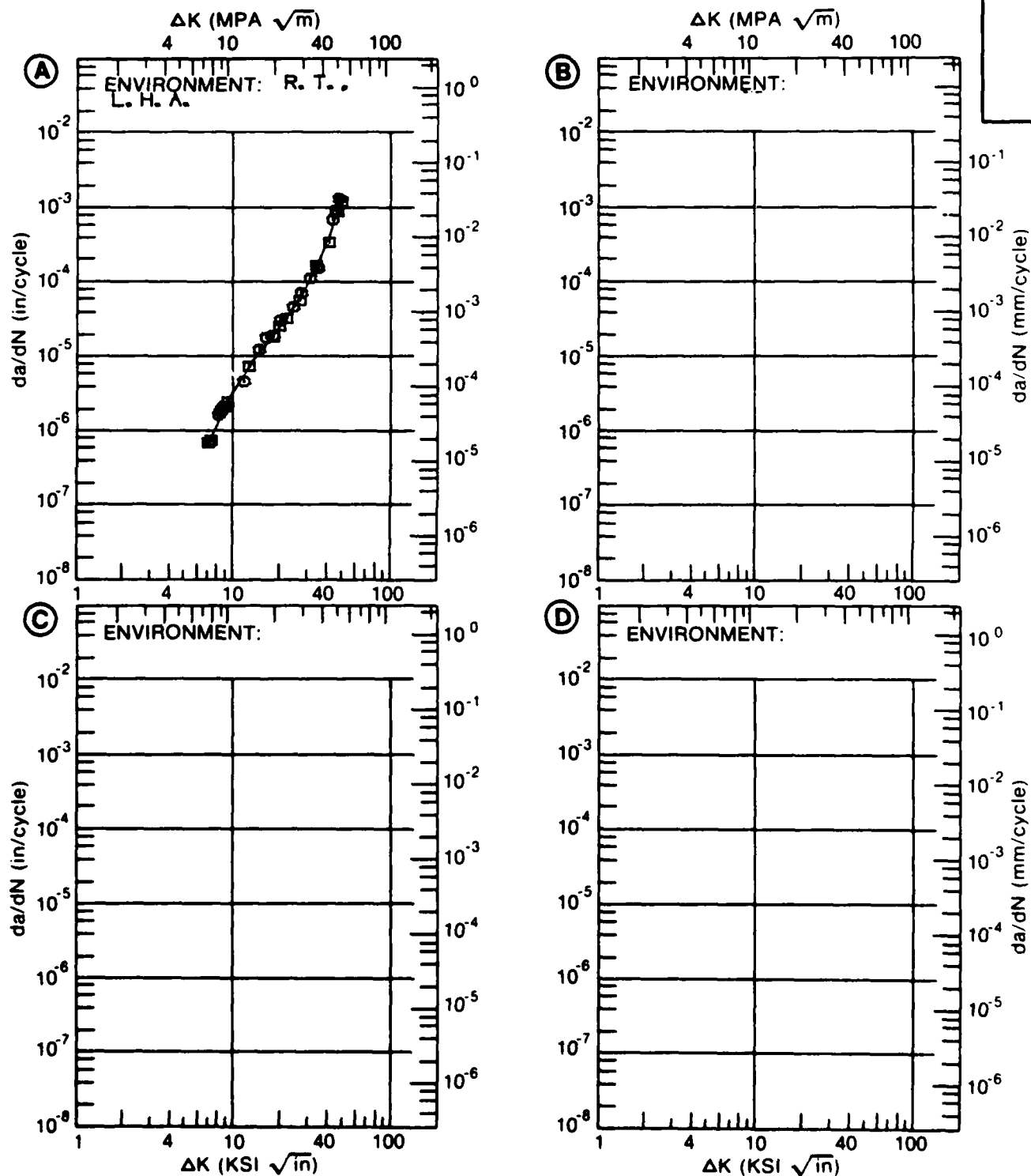


Figure 7.10.3.16

TABLE 7.10.3.17

**FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR**

DATA ASSOCIATED WITH FIGURE 7.10.3.17 INDICATING EFFECT  
OF ENVIRONMENT

MATERIAL: ALUMINUM 2219  
CONDITION: T851

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		E=+ 265F			
		: L. H. A.			
DELTA K MIN	A:	6.74	2.06		
	B:				
	C:				
	D:				
		7.00	2.39		
		8.00	3.94		
		9.00	5.88		
		10.00	8.22		
		13.00	17.7		
		16.00	31.4		
DELTA K MAX		20.00	59.4		
		25.00	120.		
	A:	27.51	167.		
	B:				
	C:				
	D:				

ROOT MEAN SQUARE 6.40  
PERCENT ERROR

LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25 1  
SUMMARY 1.25-2.0  
(NP/NA) >2.0

CONDITION/HT: T851  
 FORM: 1.75" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 STRESS RATIO: +0.08  
 FREQUENCY: 6.00 HZ

YIELD STRENGTH: 50.0 KSI  
 ULT. STRENGTH: 86.0 KSI  
 SPECIMEN THK: 0.990"  
 SPECIMEN WIDTH: 6.000"  
 REFERENCES: 88579

ALUM.  
 ALLOY

2219

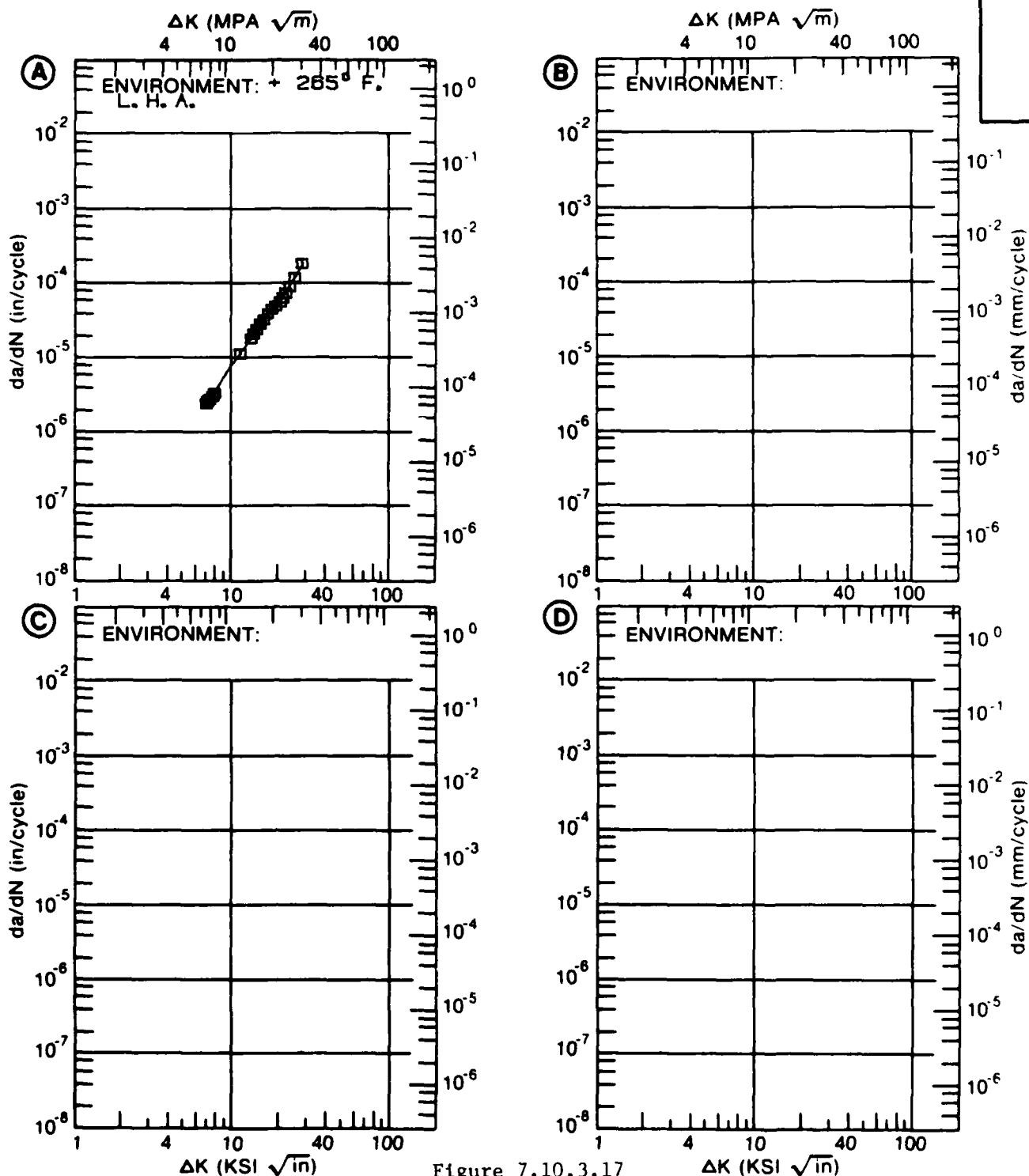


Figure 7.10.3.17



TABLE 7.10.3.18

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTORDATA ASSOCIATED WITH FIGURE 7.10.3.18 INDICATING EFFECT  
OF ENVIRONMENTMATERIAL: ALUMINUM  
CONDITION: T851

2219

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R. T. L. H. A.	E= R. T. S. T. W.	E=+ 150F S. T. W.	
DELTA K MIN	A: 6.23	1.37			
	B: 4.99		.599		
	C: 6.17			2.57	
	D:				
	5.00		.605		
	6.00		1.41		
	7.00	2.57	2.52	3.76	
	8.00	4.43	4.08	6.90	
	9.00	6.40		11.5	
	10.00	8.48		15.3	
	13.00	17.7		18.8	
DELTA K MAX	A: 15.42	35.6			
	B: 8.98		6.46		
	C: 14.97			32.2	
	D:				
ROOT MEAN SQUARE PERCENT ERROR		11.91	7.75	12.49	
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25	1	1	1	
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION/HT: T851  
 FORM: 1.75" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 STRESS RATIO: +0.08  
 FREQUENCY: 1.00 HZ

YIELD STRENGTH: 49.6 KSI  
 ULT. STRENGTH: 66.2 KSI  
 SPECIMEN THK: 0.992- 0.998"  
 SPECIMEN WIDTH: 7.400"  
 REFERENCES: 85837

ALUM.  
 ALLOY

2219

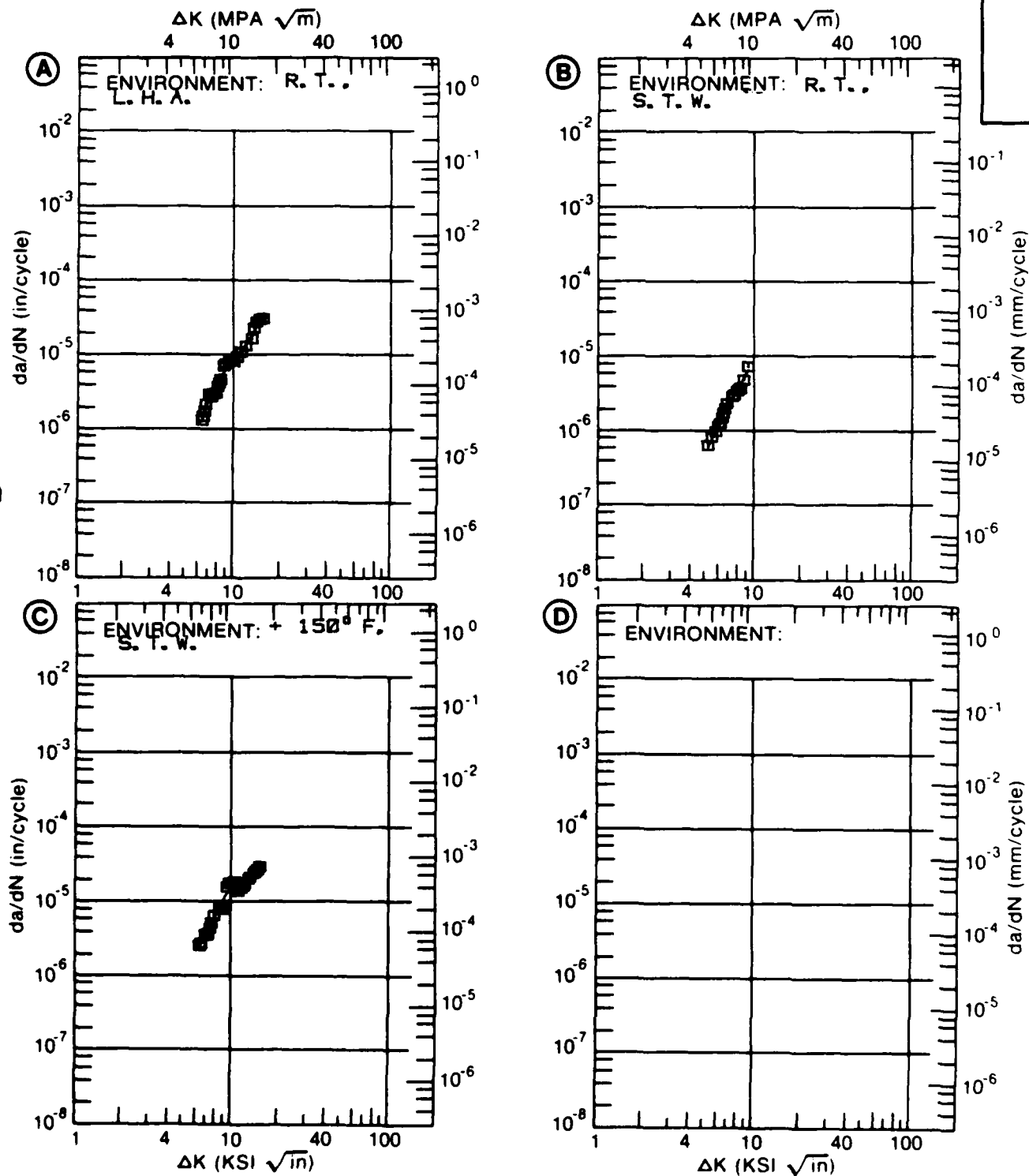


Figure 7.10.3.18

7.10-63

TABLE 7.10.3.19

**FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR**

**DATA ASSOCIATED WITH FIGURE 7.10.3.19 INDICATING EFFECT**

**OF ENVIRONMENT**

<b>MATERIAL: ALUMINUM</b>		<b>2219</b>			
<b>CONDITION: T851</b>					
<b>DELTA K</b> <b>(KSI*IN**1/2)</b>		<b>DA/DN (10**-6 IN. /CYCLE)</b>			
		<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
		<b>E= R. T.</b>	<b>E= R. T.</b>		
		<b>F. C. S.</b>	<b>S. C. S.</b>		
<b>DELTA K</b> <b>MIN</b>	<b>A:</b>	6.31	1.68		
	<b>B:</b>	6.13	1.62		
	<b>C:</b>				
	<b>D:</b>				
	7.00	2.43	2.48		
	8.00	3.76	3.77		
	9.00	5.37	5.41		
	10.00	7.26	7.42		
	13.00	14.8	15.9		
	16.00	26.1	28.4		
	20.00	50.0			
	25.00	104.			
	30.00	210.			
<b>DELTA K</b> <b>MAX</b>	<b>A:</b>	33.42	334.		
	<b>B:</b>	18.70	43.5		
	<b>C:</b>				
	<b>D:</b>				
<b>ROOT MEAN SQUARE</b>		12.94	4.49		
<b>PERCENT ERROR</b>					
<b>LIFE</b>	0.0-0.5				
<b>PREDICTION</b>	0.5-0.8				
<b>RATIO</b>	0.8-1.25	1	1		
<b>SUMMARY</b>	1.25-2.0				
<b>(NP/NA)</b>	>2.0				

CONDITION/HT: T851  
 FORM: 1.75" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 STRESS RATIO: +0.08  
 FREQUENCY: 1.00 HZ

YIELD STRENGTH: 50.0 KSI  
 ULT. STRENGTH: 66.0 KSI  
 SPECIMEN THK: 0.990"  
 SPECIMEN WIDTH: 8.010"  
 REFERENCES: 88579

ALUM.  
ALLOY

2219

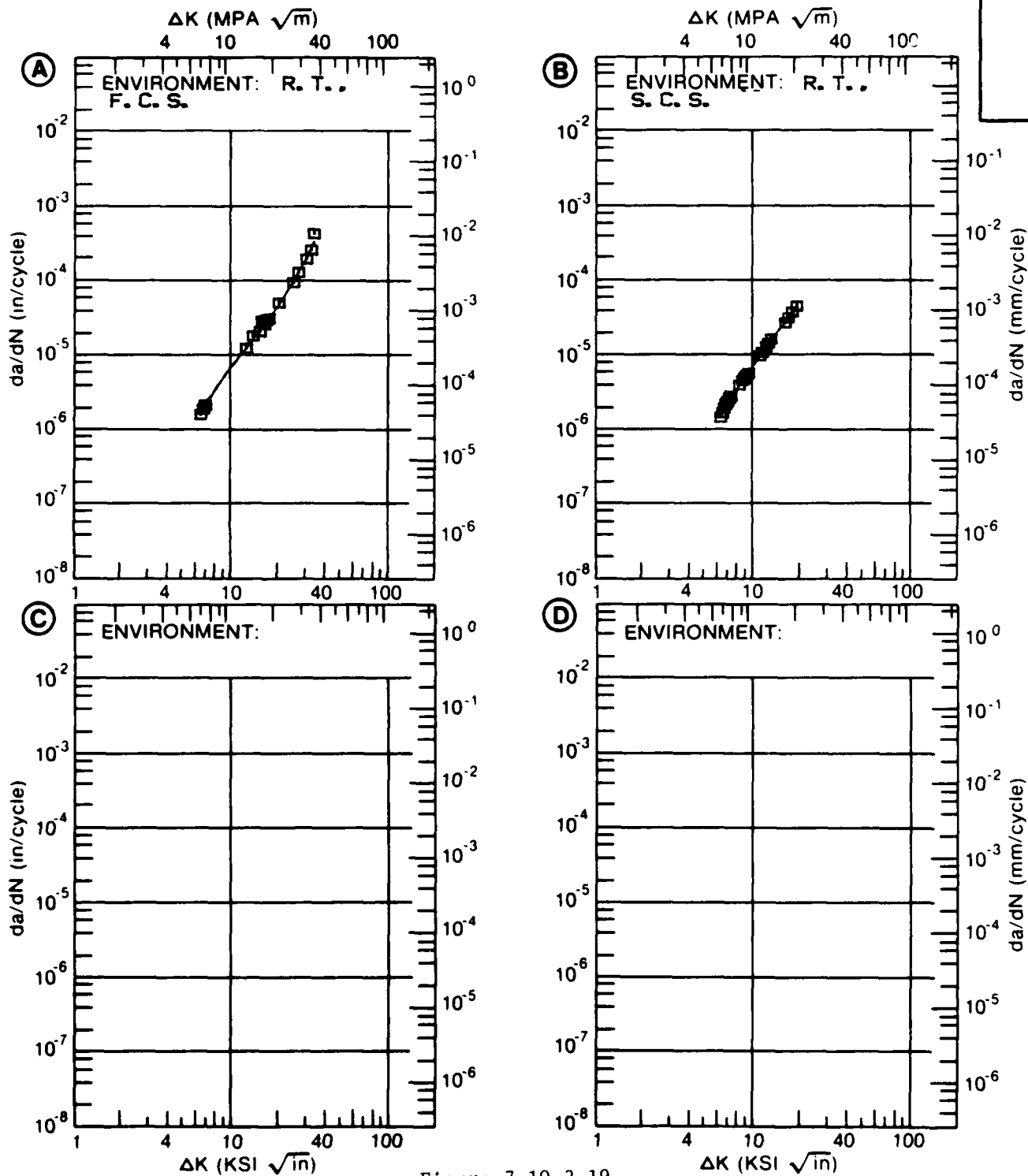


Figure 7.10.3.19

TABLE 7.10.3.20

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTORDATA ASSOCIATED WITH FIGURE 7.10.3.20 INDICATING EFFECT  
OF ENVIRONMENTMATERIAL: ALUMINUM  
CONDITION: TB51

2219

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R. T. L. H. A.	E= R. T. S. T. W.		
DELTA K MIN	A: 6.98	1.58			
	B: 13.00		11.8		
	C:				
	D:				
	7.00	1.60			
	8.00	3.03			
	9.00	4.89			
	10.00	7.10			
	13.00	15.5	11.8		
	16.00	26.9	22.9		
	20.00		55.6		
	25.00		115.		
	30.00		245.		
DELTA K MAX	A: 18.26	38.9			
	B: 30.86		300.		
	C:				
	D:				
ROOT MEAN SQUARE PERCENT ERROR		6.74	8.86		

LIFE 0.0-0.5  
 PREDICTION 0.5-0.8  
 RATIO 0.8-1.25  
 SUMMARY 1.25-2.0  
 (NP/NA) >2.0

1

1

CONDITION/HT: T851  
 FORM: 1.75" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 STRESS RATIO: +0.08  
 FREQUENCY: 0.10 HZ

YIELD STRENGTH: 50.0 KSI  
 ULT. STRENGTH: 66.0 KSI  
 SPECIMEN THK: 0.994- 1.000"  
 SPECIMEN WIDTH: 6.000- 6.010"  
 REFERENCES: 98579

ALUM.  
 ALLOY

2219

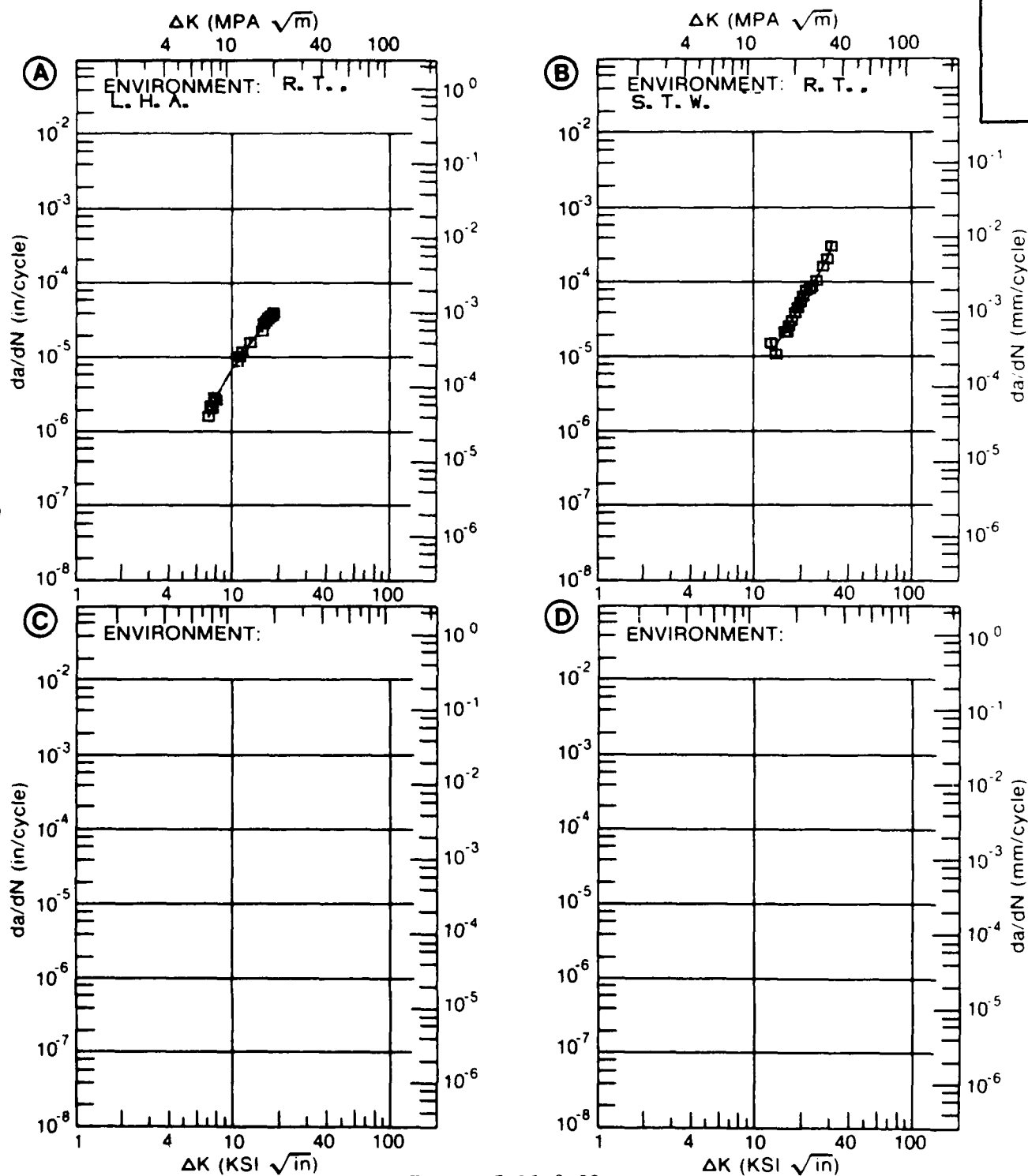


Figure 7.10.3.20

TABLE 7.10.3.21

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.10.3.21 INDICATING EFFECT

## OF ENVIRONMENT

---

MATERIAL: ALUMINUM 2219  
CONDITION: T851

---

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R. T. L. H. A.			
DELTA K MIN	A: 3.09	.223			
	B:				
	C:				
	D:				
	3.50	.256			
	4.00	.344			
	5.00	.723			
	6.00	1.49			
	7.00	2.76			
	8.00	4.49			
DELTA K MAX	9.00	6.41			
	10.00	8.15			
	A: 10.70	9.05			
	B:				
	C:				
	D:				

---

ROOT MEAN SQUARE 13.61  
PERCENT ERROR

---



---

LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25 1  
SUMMARY 1.25-2.0  
(NP/NA) >2.0

---

CONDITION/HT: T851  
 FORM: 1.75" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 STRESS RATIO: +0.50  
 FREQUENCY: 6.00 HZ

YIELD STRENGTH: 49.6 KSI  
 ULT. STRENGTH: 66.2 KSI  
 SPECIMEN THK: 1.000"  
 SPECIMEN WIDTH: 6.000"  
 REFERENCES: 85837

ALUM.  
 ALLOY

2219

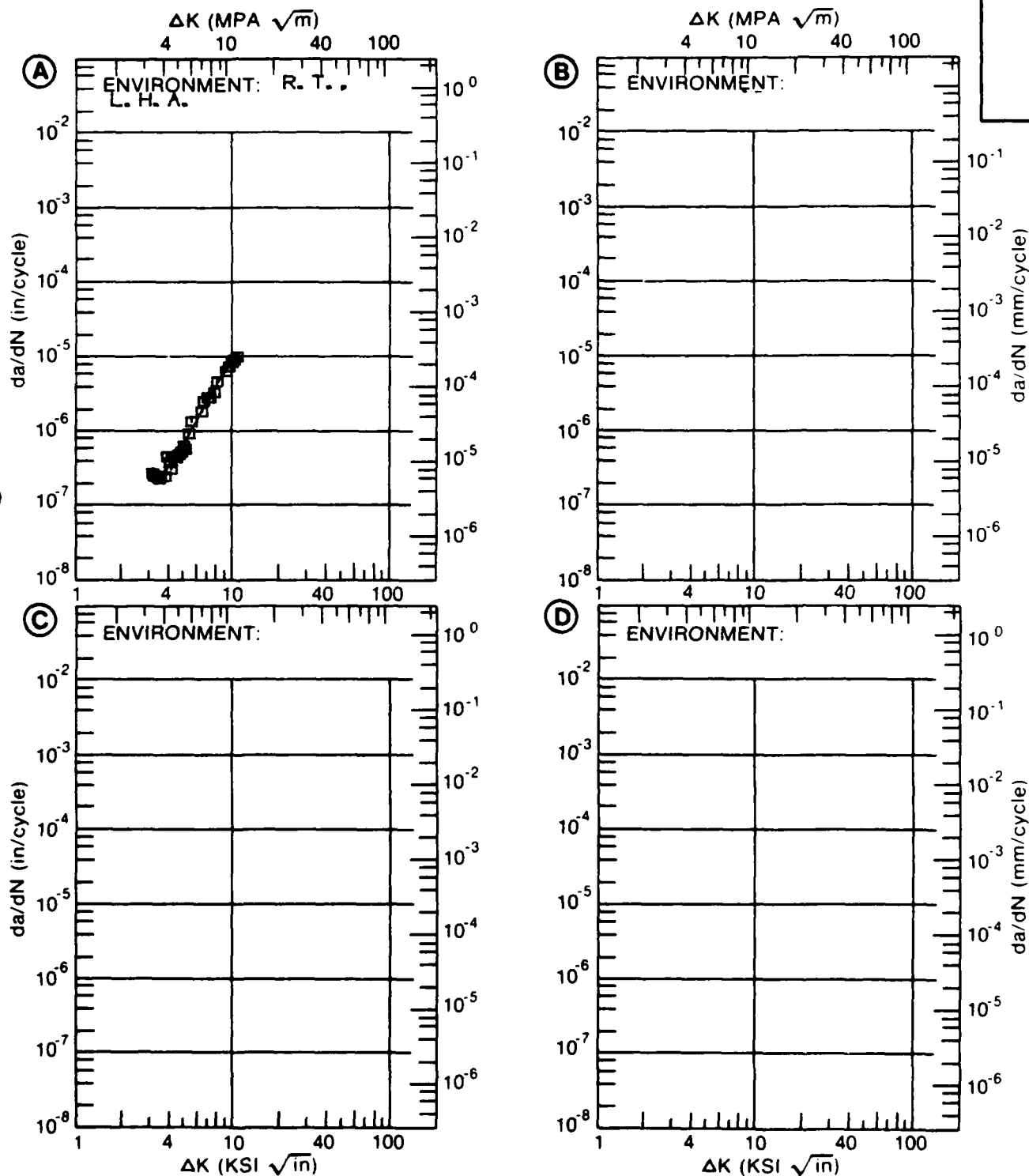


Figure 7.10-3.21  
 7.10-69



TABLE 7.10.3.22

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.10.3.22 INDICATING EFFECT  
OF FREQUENCY

MATERIAL: ALUMINUM 2219  
CONDITION: T851  
ENVIRONMENT: R. T. , L. H. A.

DELTA K (KSI*IN**1/2)		DA/DN (10**~6 IN. /CYCLE)			
		A	B	C	D
		F(HZ)= 63.30			
DELTA K MIN	A: 3.34	.0853			
	B:				
	C:				
	D:				
	3.50	.0823			
	4.00	.119			
	5.00	.282			
	6.00	.600			
	7.00	1.17			
	8.00	2.08			
DELTA K MAX	9.00	3.30			
	10.00	4.67			
	A: 11.59	6.57			
	B:				
	C:				
	D:				

ROOT MEAN SQUARE 19.22  
PERCENT ERROR

LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25 1  
SUMMARY 1.25-2.0  
(NP/NA) >2.0

CONDITION/HT: T851  
 FORM: 1.75" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 STRESS RATIO: +0.08  
 ENVIRONMENT: R. T., L. H. A.

YIELD STRENGTH: 49.6 KSI  
 ULT. STRENGTH: 66.2 KSI  
 SPECIMEN THK: 0.993"  
 SPECIMEN WIDTH: 7.400"  
 REFERENCES: 85837

ALUM.  
 ALLOY

2219

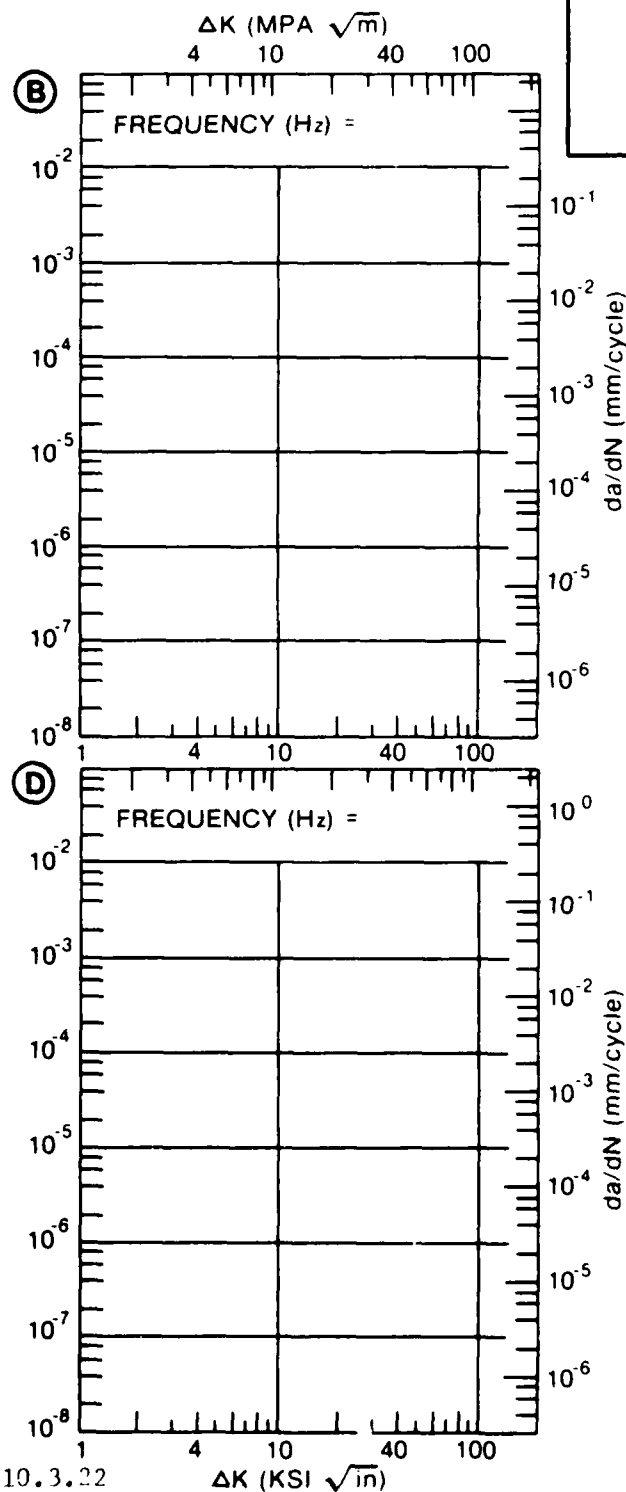
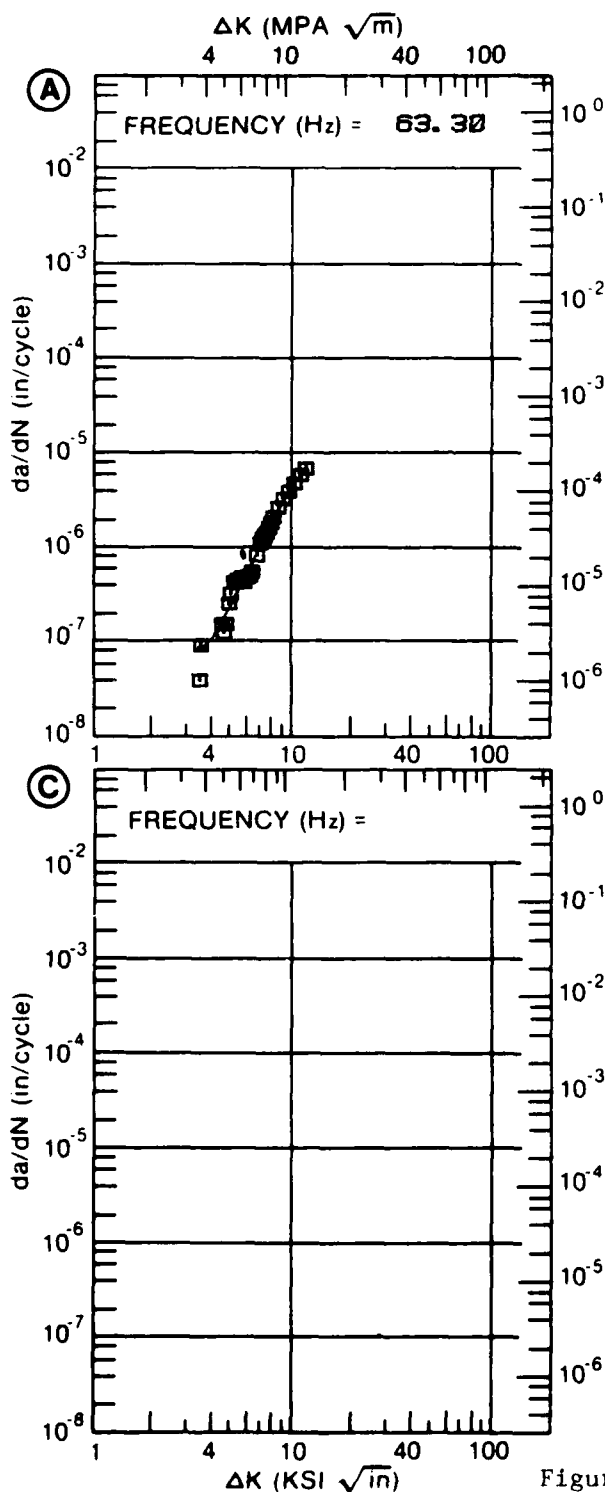


Figure 7.10.3.22

TABLE 7.10.3.23

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTORDATA ASSOCIATED WITH FIGURE 7.10.3.23 INDICATING EFFECT  
OF ENVIRONMENTMATERIAL: ALUMINUM  
CONDITION: T851

2219

DELTA K  
(KSI\*IN\*\*1/2)

DA/DN (10\*\*-6 IN./CYCLE)

A

B

C

D

E= R. T.

E=+ 265F

E= R. T.

L. H. A., 6HZ

L. H. A., 6HZ

S. T. W., 1HZ

DELTA K	A:	7.12	1.40		
MIN	B:	6.69	1.96		
	C:	4.01		.246	
	D:				
		5.00		1.02	
		6.00		2.42	
		7.00	2.36	4.24	
		8.00	3.90	6.28	
		9.00	5.88	8.46	
		10.00	8.32	10.8	
		13.00	19.2	19.8	
		16.00	38.2	35.2	
		20.00	88.6	81.5	
		25.00	244.	268.	
		30.00	616.		
DELTA K	A:	32.50	1536.		
MAX	B:	25.72	282.		
	C:	29.24		815.	
	D:				

ROOT MEAN SQUARE  
PERCENT ERROR

11.01

9.22

23.95

LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25  
SUMMARY 1.25-2.0  
(NP/NA) >2.0

1

1

1

CONDITION/HT: T851  
 FORM: 1.75" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: T-L  
 STRESS RATIO: +0.08  
 FREQUENCY:

YIELD STRENGTH: 48.0 KSI  
 ULT. STRENGTH: 85.9- 88.0 KSI  
 SPECIMEN THK: 0.995- 1.000"  
 SPECIMEN WIDTH: 8.000- 8.010"  
 REFERENCES: 88579, 88587

ALUM.  
 ALLOY

2219

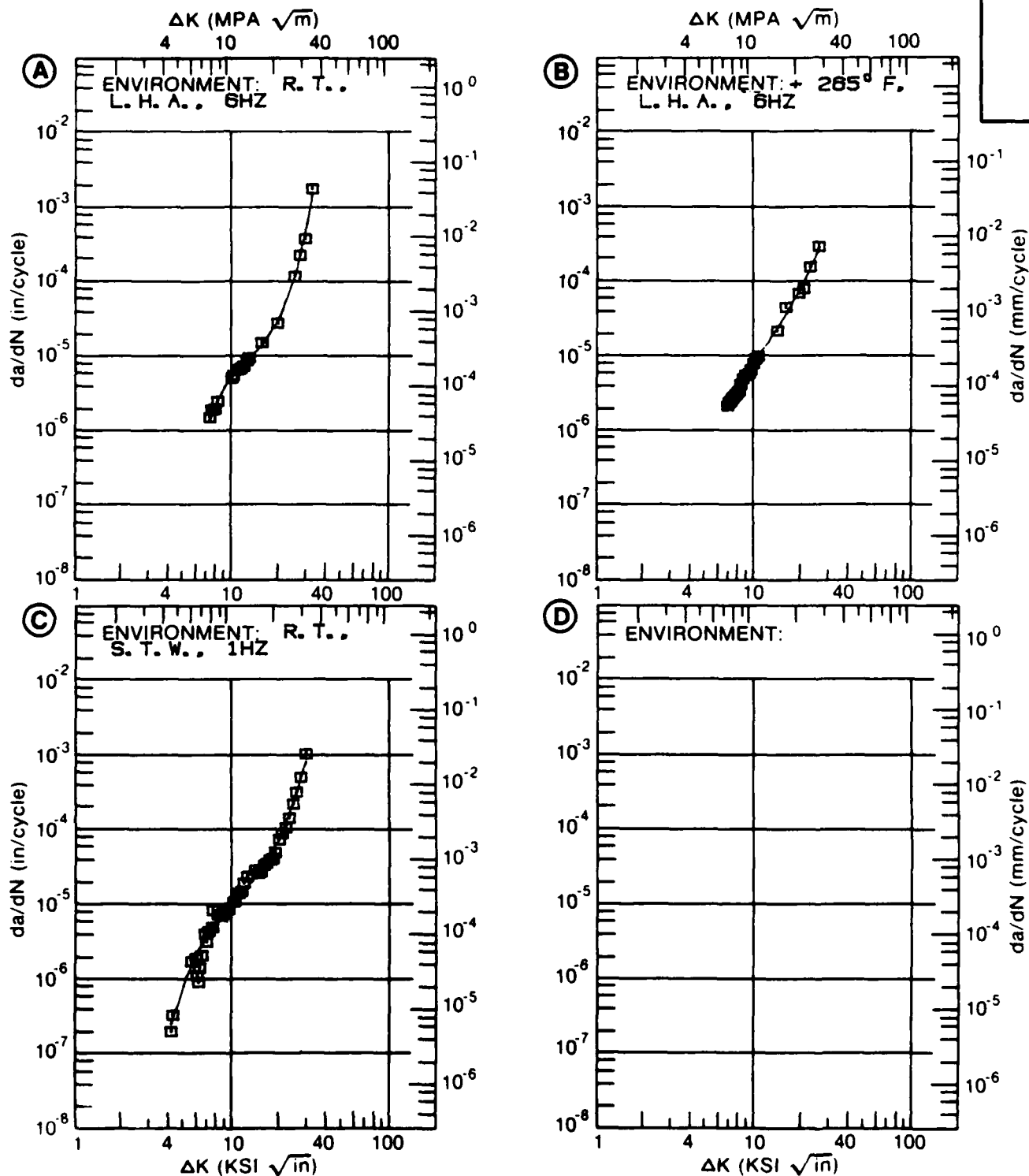


Figure 7.10.3.23

TABLE 7.10.3.24

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTORDATA ASSOCIATED WITH FIGURE 7.10.3.24 INDICATING EFFECT  
OF ENVIRONMENT

MATERIAL: ALUMINUM		2219			
CONDITION: T851					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R. T.	E= R. T.		
		L. H. A.	S. T. W.		
DELTA K MIN	A:	5.95	1.30		
	B:	6.48		1.21	
	C:				
	D:				
		6.00	1.35		
		7.00	2.51	2.02	
		8.00	3.98	4.25	
		9.00	5.72	7.20	
		10.00	7.74	10.6	
		13.00	15.8	22.1	
DELTA K MAX		16.00	28.5	35.1	
		20.00	60.3	59.5	
		25.00	155.	119.	
		30.00	411.		
	A:	32.68	700.		
	B:	27.75		183.	
	C:				
	D:				
ROOT MEAN SQUARE		32.94	13.81		
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8	1			
RATIO	0.8-1.25	1	1		
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION/HT: T851  
 FORM: 2.00" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 STRESS RATIO: +0.08  
 FREQUENCY: 8.00 HZ

YIELD STRENGTH: 49.6- 50.0 KSI  
 ULT. STRENGTH: 86.2- 88.0 KSI  
 SPECIMEN THK: 0.993- 1.000"  
 SPECIMEN WIDTH: 6.000"  
 REFERENCES: 88579, 85837

ALUM.  
 ALLOY

2219

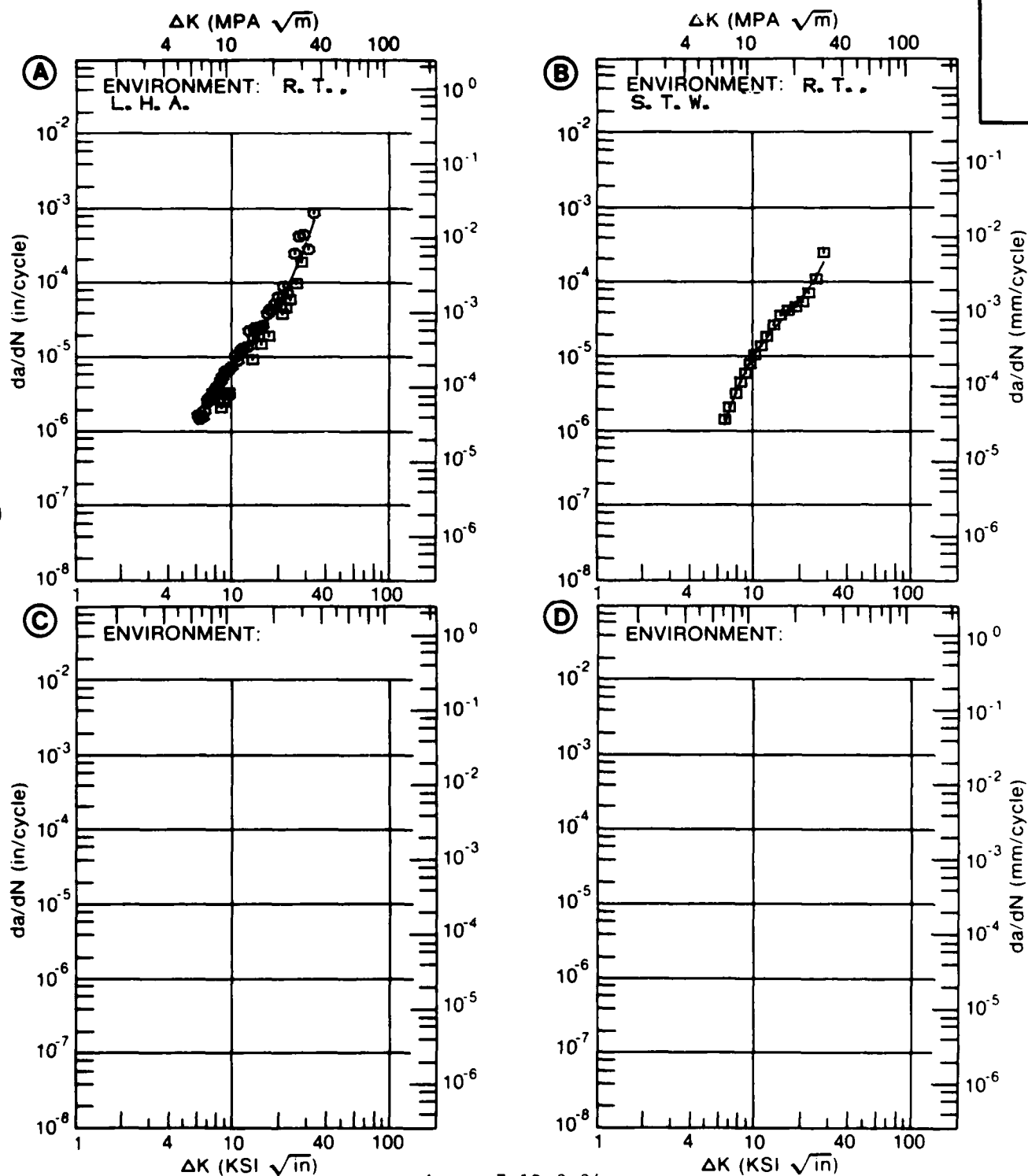


Figure 7.10.3.24

TABLE 7.10.3.25

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.10.3.2 INDICATING EFFECT

OF ENVIRONMENT

MATERIAL: ALUMINUM		2219			
CONDITION: T851					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		E= R. T.	E= R. T.		
		L. H. A.	DIST. H20		
DELTA K MIN	A:	5.66	.982		
	B:	6.07	1.39		
	C:				
	D:				
	6.00	1.19			
	7.00	2.03	2.51		
	8.00	3.35	4.06		
	9.00	5.18	5.93		
	10.00	7.60	8.09		
	13.00	18.0	16.4		
	16.00	30.8	28.6		
	20.00	54.0	55.7		
	25.00	125.	124.		
	30.00	347.	304.		
	35.00	1218.	1118.		
DELTA K MAX	A:	35.37	1401.		
	B:	36.90	2114.		
	C:				
	D:				
ROOT MEAN SQUARE		16.22	10.10		
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25	1	2		
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION/HT: T851  
 FORM: 2.00" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 STRESS RATIO: +0.08  
 FREQUENCY: 1.00 HZ

YIELD STRENGTH: 50.0 KSI  
 ULT. STRENGTH: 68.0 KSI  
 SPECIMEN THK: 0.990"  
 SPECIMEN WIDTH: 6.000"  
 REFERENCES: 88579

ALUM.  
 ALLOY

2219

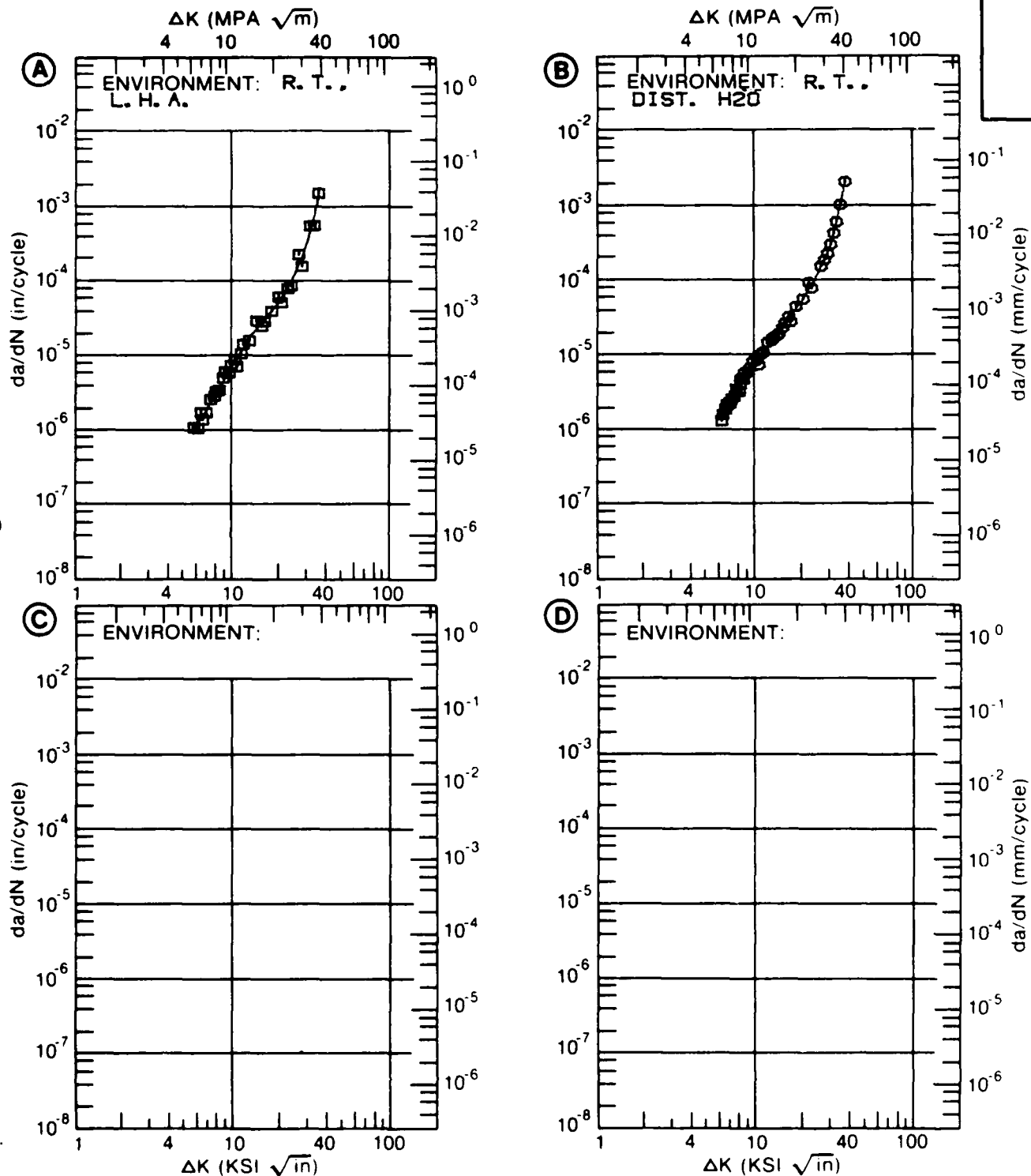


Figure 7.10.3.25



TABLE 7.10.3.26

**FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR**

**DATA ASSOCIATED WITH FIGURE 7.10.3.26 INDICATING EFFECT  
OF ENVIRONMENT**

MATERIAL: ALUMINUM		2219			
CONDITION: T851					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R. T.			
		L. H. A.			
DELTA K A:	5.67	1.43			
DELTA K B:					
MIN C:					
D:					
	6.00	1.76			
	7.00	2.97			
	8.00	4.50			
	9.00	6.39			
	10.00	8.71			
	13.00	19.3			
	16.00	39.6			
	20.00	100.			
	25.00	317.			
DELTA K A:	29.91	989.			
DELTA K B:					
MAX C:					
D:					
ROOT MEAN SQUARE		32.37			
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25	1			
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION/HT: T851  
 FORM: 2.00" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: T-L  
 STRESS RATIO: +0.08  
 FREQUENCY: 6.00 HZ

YIELD STRENGTH: 50.0 KSI  
 ULT. STRENGTH: 88.0 KSI  
 SPECIMEN THK: 0.990"  
 SPECIMEN WIDTH: 5.990"  
 REFERENCES: 88579

ALUM.  
 ALLOY

2219

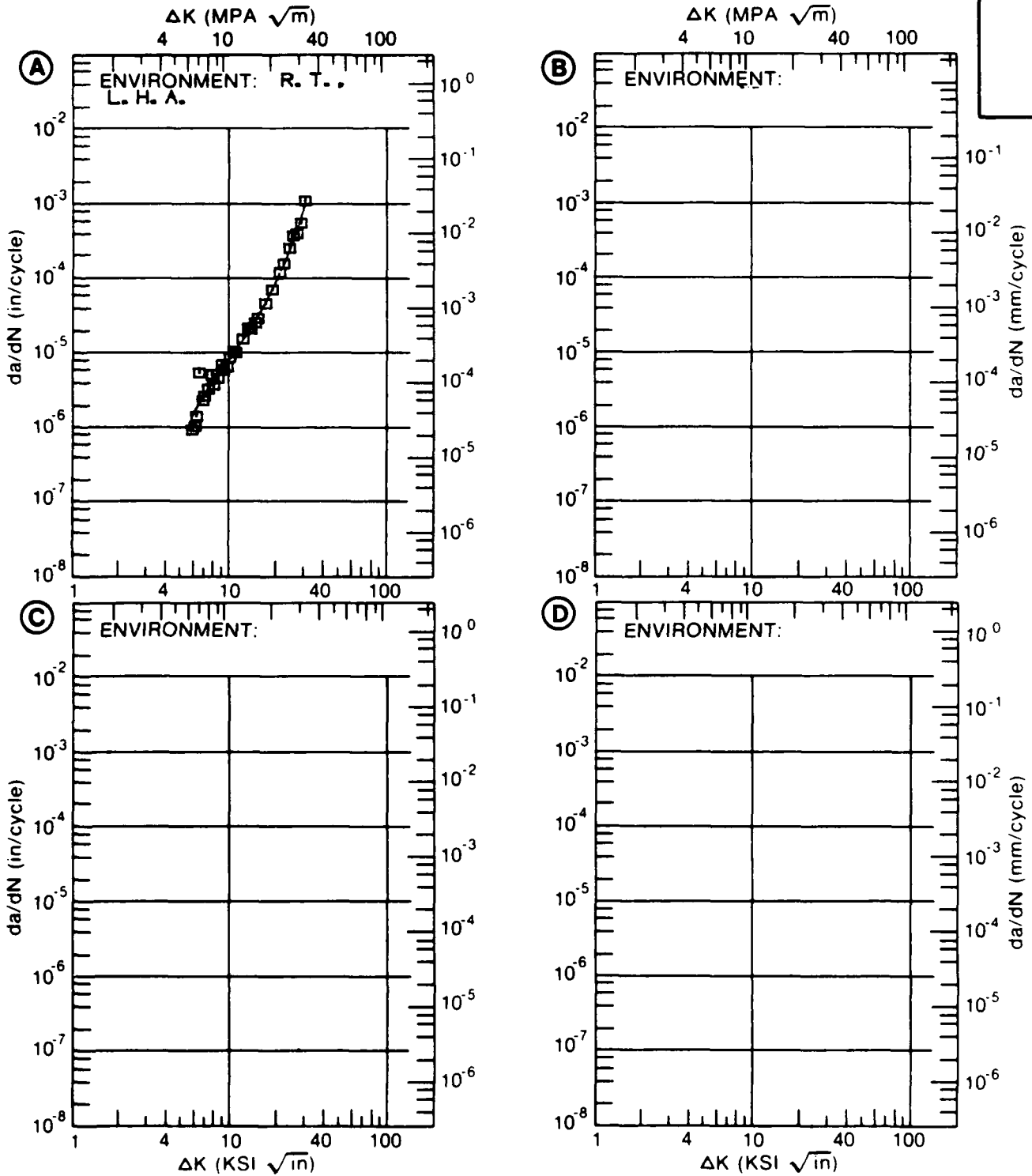


Figure 7.10.3.26

TABLE 7.10.3.27

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.10.3.27 INDICATING EFFECT

OF ENVIRONMENT

MATERIAL: ALUMINUM  
CONDITION: T851

2219

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R. T. L. H. A. 6HZ	E= R. T. S. T. W. 1HZ		
DELTA K	A: 6.28	1.31			
MIN	B: 8.43		3.46		
	C:				
	D:				
	7.00	1.65			
	8.00	2.25			
	9.00	3.01	4.60		
	10.00	3.95	7.14		
	13.00	7.96	17.6		
	16.00	13.8	30.1		
	20.00	24.4	64.0		
	25.00	67.4	206.		
DELTA K	A: 28.98	267.			
MAX	B: 28.46		386.		
	C:				
	D:				
ROOT MEAN SQUARE		32.80	14.62		
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25	2	1		
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION/HT: T851  
 FORM: 3.00" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 STRESS RATIO: +0.08  
 FREQUENCY:

YIELD STRENGTH: 53.0- 54.0 KSI  
 ULT. STRENGTH: 67.0- 69.0 KSI  
 SPECIMEN THK: 0.990- 1.000"  
 SPECIMEN WIDTH: 7.400"  
 REFERENCES: 88579

ALUM.  
ALLOY

2219

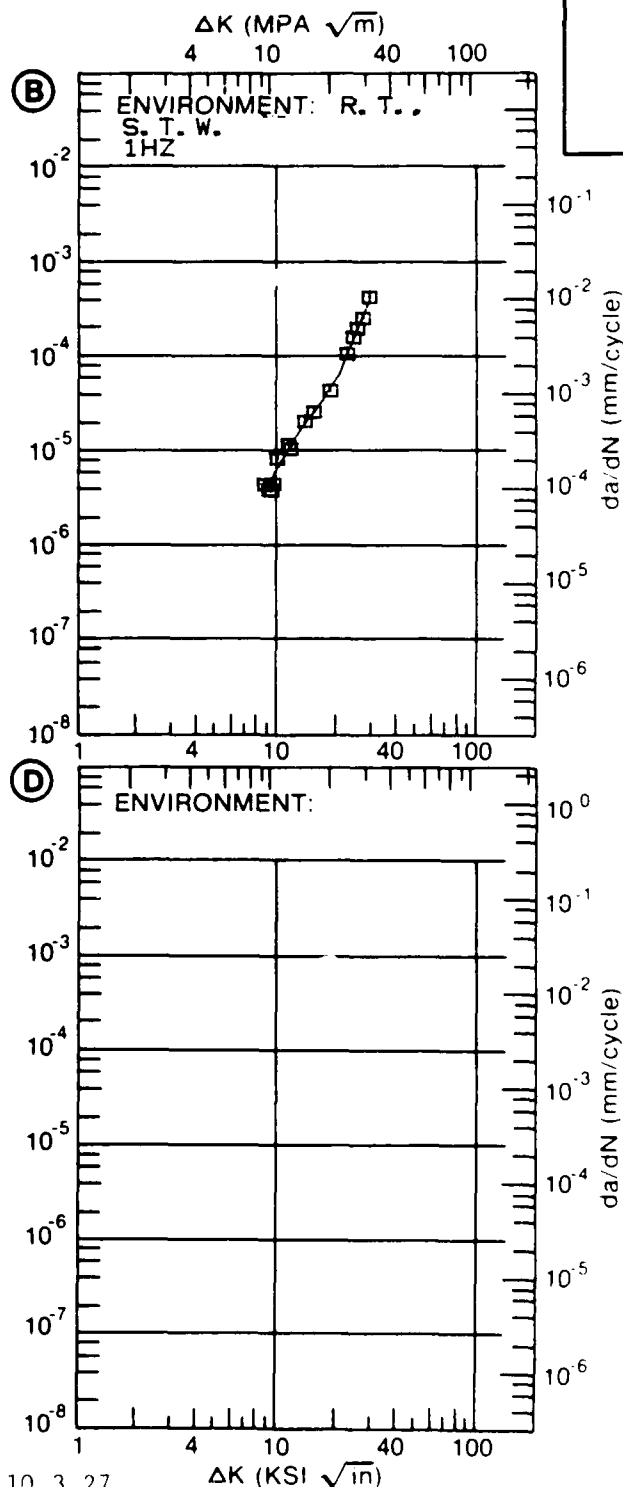
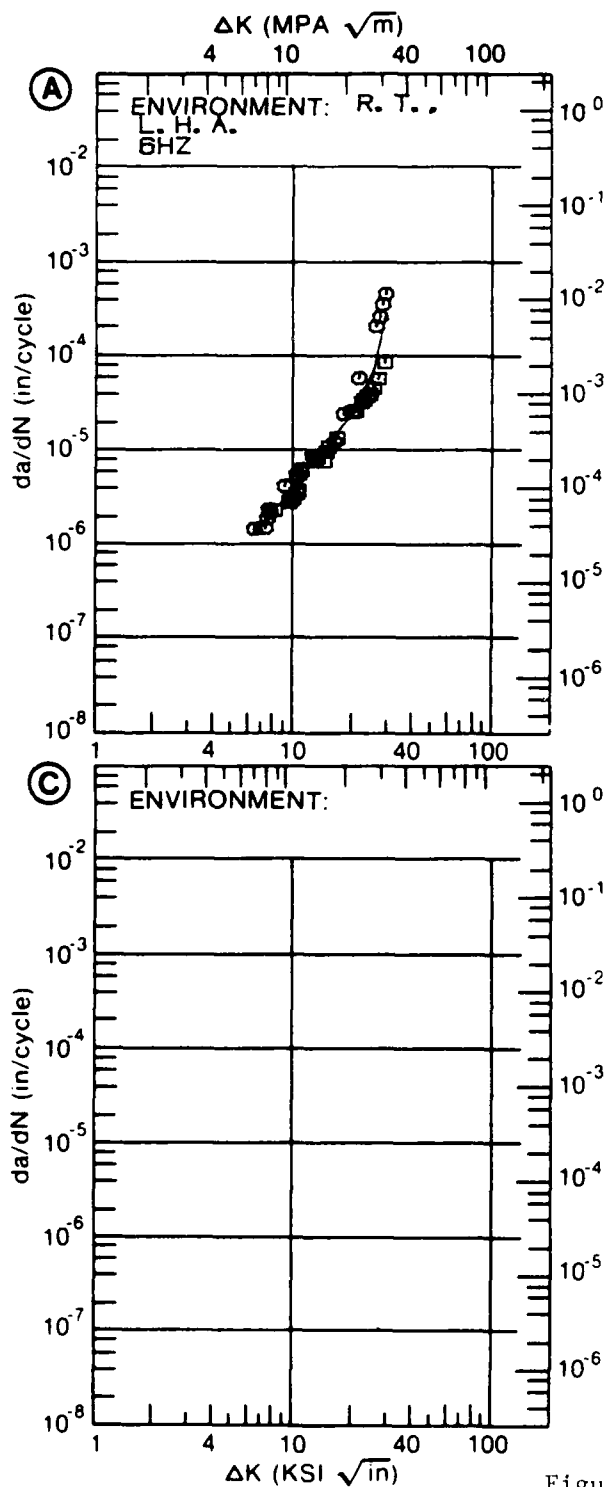


Figure 7.10.3.27

TABLE 7.10.3.28

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTORDATA ASSOCIATED WITH FIGURE 7.10.3.28 INDICATING EFFECT  
OF STRESS RATIO

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MATERIAL: ALUMINUM 2219  
CONDITION: T851  
ENVIRONMENT: R. T. , S. T. W.

---

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		R=+0.08			
DELTA K MIN	A: 10.27	13.7			
	B:				
	C:				
	D:				
13.00		22.3			
DELTA K MAX	A: 15.94	45.7			
	B:				
	C:				
	D:				

---

ROOT MEAN SQUARE 8.57  
PERCENT ERROR

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LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25 1  
SUMMARY 1.25-2.0  
(NP/NA) >2.0

---

CONDITION/HT: T851  
 FORM: 3.00" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: T-L  
 FREQUENCY: 1.00 HZ  
 ENVIRONMENT: R. T. . S. T. W.

YIELD STRENGTH: 53.0 KSI  
 ULT. STRENGTH: 68.0 KSI  
 SPECIMEN THK: 1.000"  
 SPECIMEN WIDTH: 7.400"  
 REFERENCES: 88579

ALUM.  
 ALLOY

2219

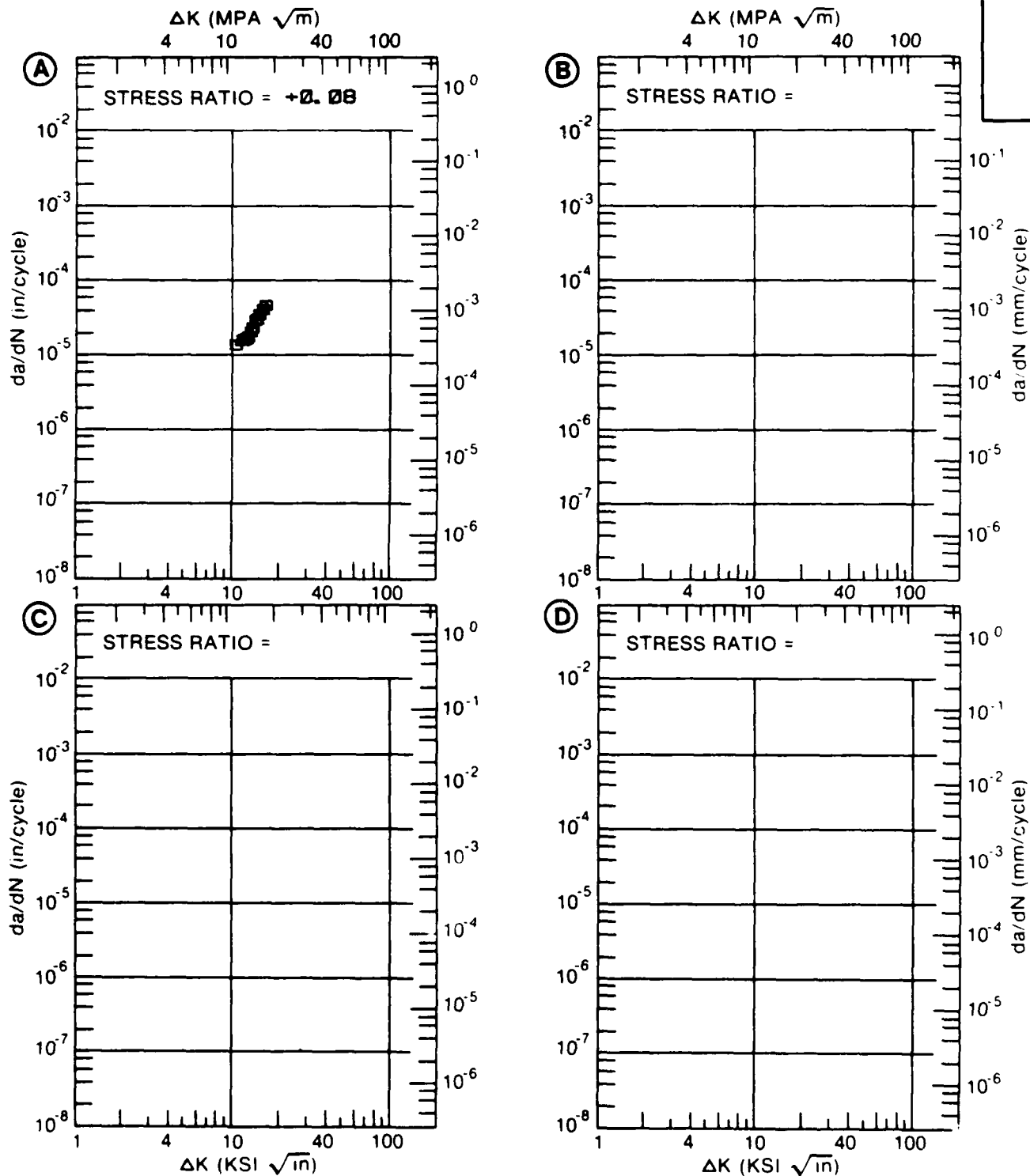


Figure 7.10.3.28

TABLE 7.10.3.29

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.10.3.29 INDICATING EFFECT

## OF STRESS RATIO

MATERIAL: ALUMINUM 2219  
 CONDITION: T8511  
 ENVIRONMENT: R. T. , L. H. A.

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		R=+0.08	R=+0.30		
DELTA K A:	4.70	.155			
MIN B:	5.64		.629		
C:					
D:					
	5.00	.234			
	6.00	.415	.747		
	7.00	.622	1.30		
	8.00	.908	2.32		
	9.00	1.36	3.99		
	10.00	2.12	6.44		
	13.00	9.11	17.6		
	16.00	22.1	26.5		
DELTA K A:	18.71	23.1			
MAX B:	17.17		27.2		
C:					
D:					

ROOT MEAN SQUARE 15.28 9.31  
 PERCENT ERROR

LIFE 0.0-0.5  
 PREDICTION 0.5-0.8  
 RATIO 0.8-1.25  
 SUMMARY 1.25-2.0  
 (NP/NA) >2.0

1

1

CONDITION/HT: T8511  
 FORM: 1.75" TH EXTRUDED BAR  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 FREQUENCY: 6.00 HZ  
 ENVIRONMENT: R. T., L. H. A.

YIELD STRENGTH: 51.0 KSI  
 ULT. STRENGTH: 66.0 KSI  
 SPECIMEN THK: 0.992-0.993"  
 SPECIMEN WIDTH: 6.000"  
 REFERENCES 85837

ALUM.  
 ALLOY

2219

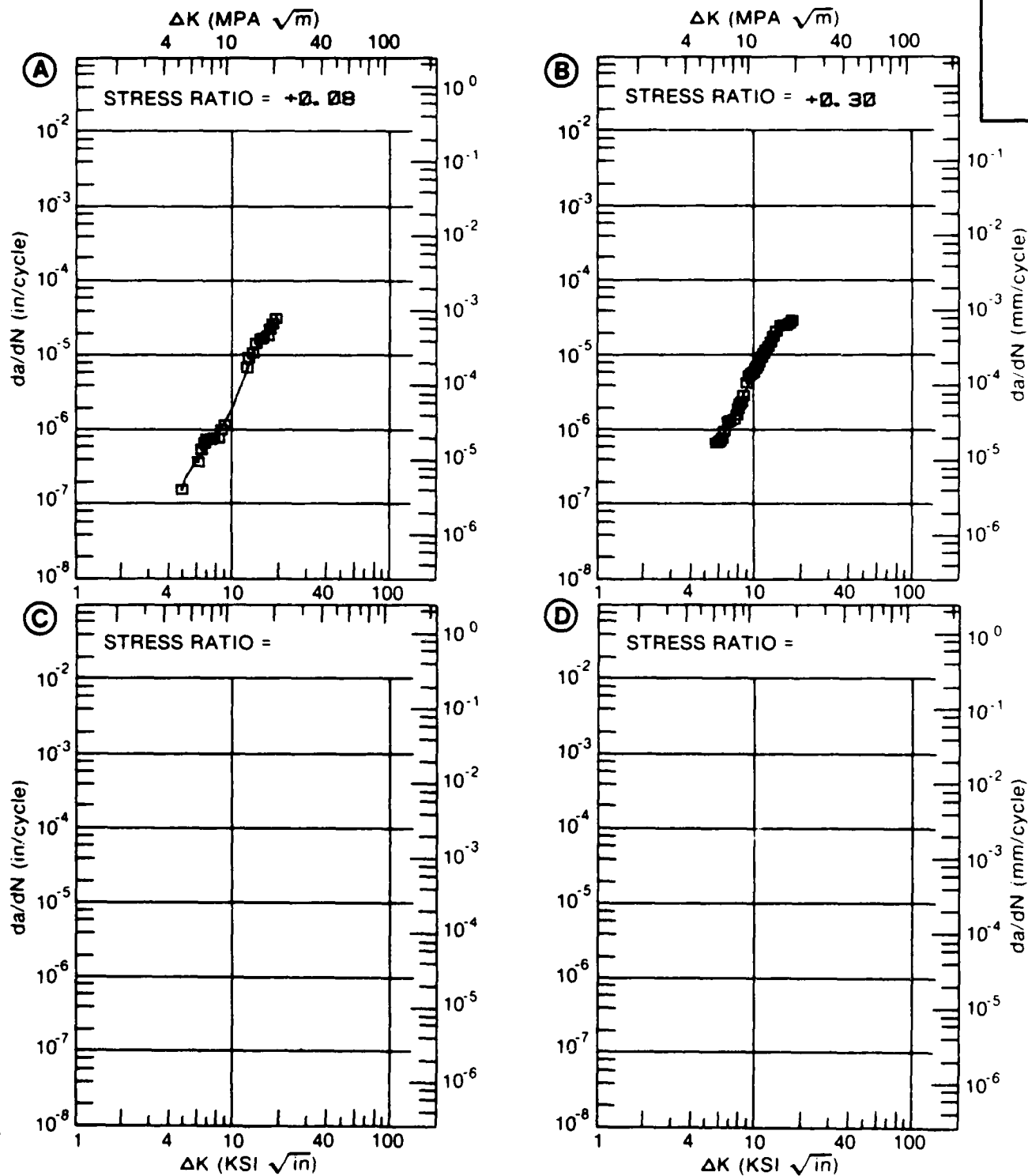


Figure 7.10.3.29



TABLE 7.10.3.30

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.10.3.30 INDICATING EFFECT

OF STRESS RATIO

MATERIAL: ALUMINUM 2219  
 CONDITION: T8511  
 ENVIRONMENT: R. T. , S. T. W.

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		R=+0.08			
DELTA K MIN	A:	7.84	2.76		
	B:				
	C:				
	D:				
		8.00	2.98		
		9.00	4.78		
		10.00	7.39		
		13.00	19.8		
DELTA K MAX	A:	14.17	25.4		
	B:				
	C:				
	D:				

ROOT MEAN SQUARE 12.05  
 PERCENT ERROR

LIFE 0.0-0.5  
 PREDICTION 0.5-0.8  
 RATIO 0.8-1.25 1  
 SUMMARY 1.25-2.0  
 (NP/NA) >2.0

CONDITION/HT: T8511  
 FORM: 1.75" TH EXTRUDED BAR  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 FREQUENCY: 1.00 HZ  
 ENVIRONMENT: R. T. . S. T. W.

YIELD STRENGTH: 51.0 KSI  
 ULT. STRENGTH: 66.0 KSI  
 SPECIMEN THK: 0.992"  
 SPECIMEN WIDTH: 6.000"  
 REFERENCES 85837

ALUM.  
 ALLOY

2219

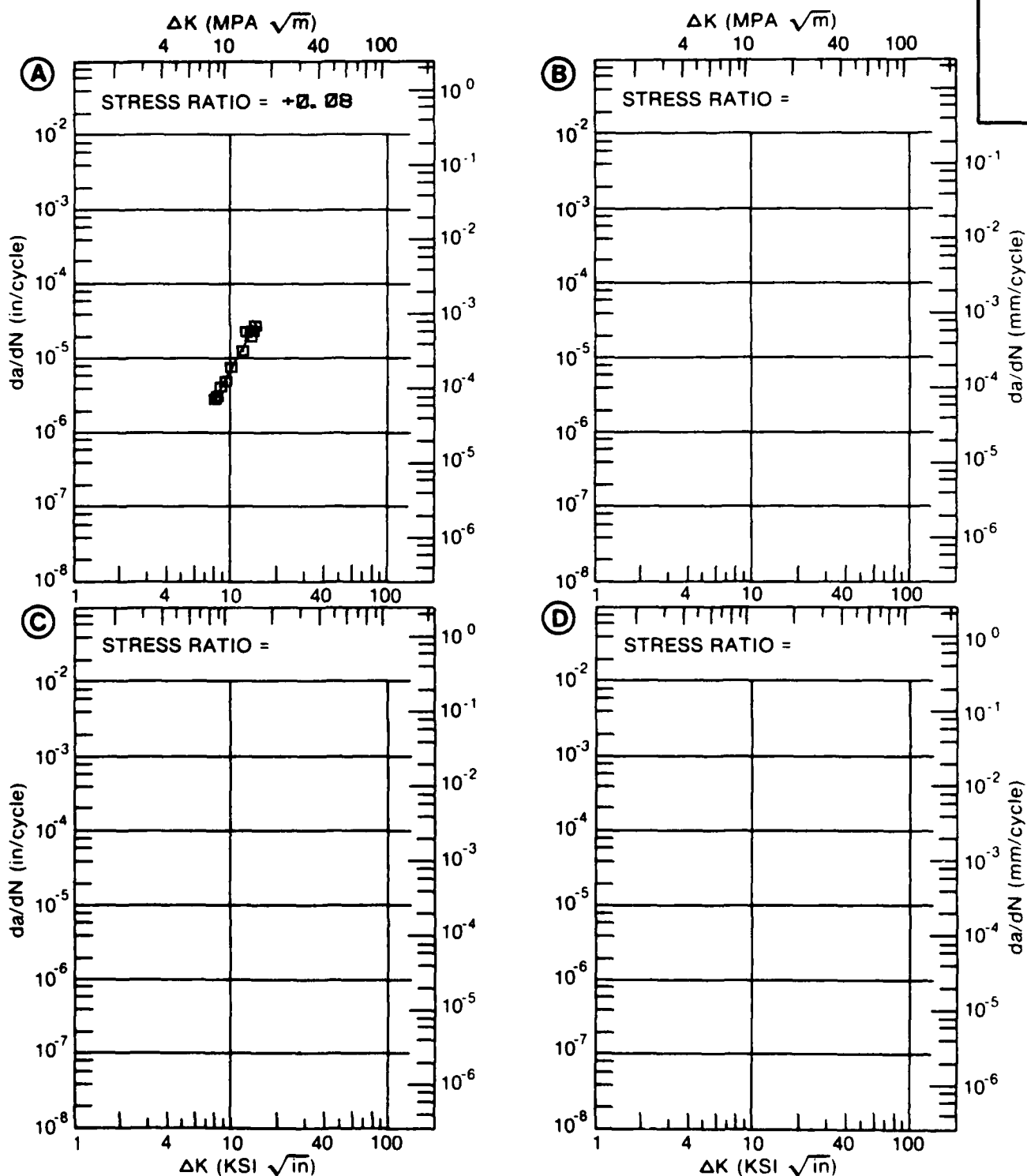


Figure 7.10.3.30

TABLE 7.10.3.31

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.10.3.3 INDICATING EFFECT  
OF ENVIRONMENT

MATERIAL: ALUMINUM		2219			
CONDITION: T8511					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		E= R. T.	E= R. T.		
		L. H. A.	S. T. W.		
		6HZ	1HZ		
A:	5.85	.685			
DELTA K B:	4.86		.562		
MIN C:					
D:					
	5.00		.645		
	6.00	.763	1.42		
	7.00	1.37	2.47		
	8.00	2.14	3.79		
	9.00	3.08	5.40		
	10.00	4.26	7.37		
	13.00	10.5	16.7		
	16.00	26.5			
A:	16.35	29.6			
DELTA K B:	15.36		30.6		
MAX C:					
D:					
ROOT MEAN SQUARE		7.85	7.26		
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25	1	1		
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION/HT: T8511  
 FORM: 1.75"TH EXTRUDED BAR  
 SPECIMEN TYPE: CT  
 ORIENTATION: T-L  
 STRESS RATIO: +0.08  
 FREQUENCY:

YIELD STRENGTH: 51.0 KSI  
 ULT. STRENGTH: 66.0 KSI  
 SPECIMEN THK: 0.990- 0.995"  
 SPECIMEN WIDTH: 6.000"  
 REFERENCES: 85037

ALUM.  
 ALLOY

2219

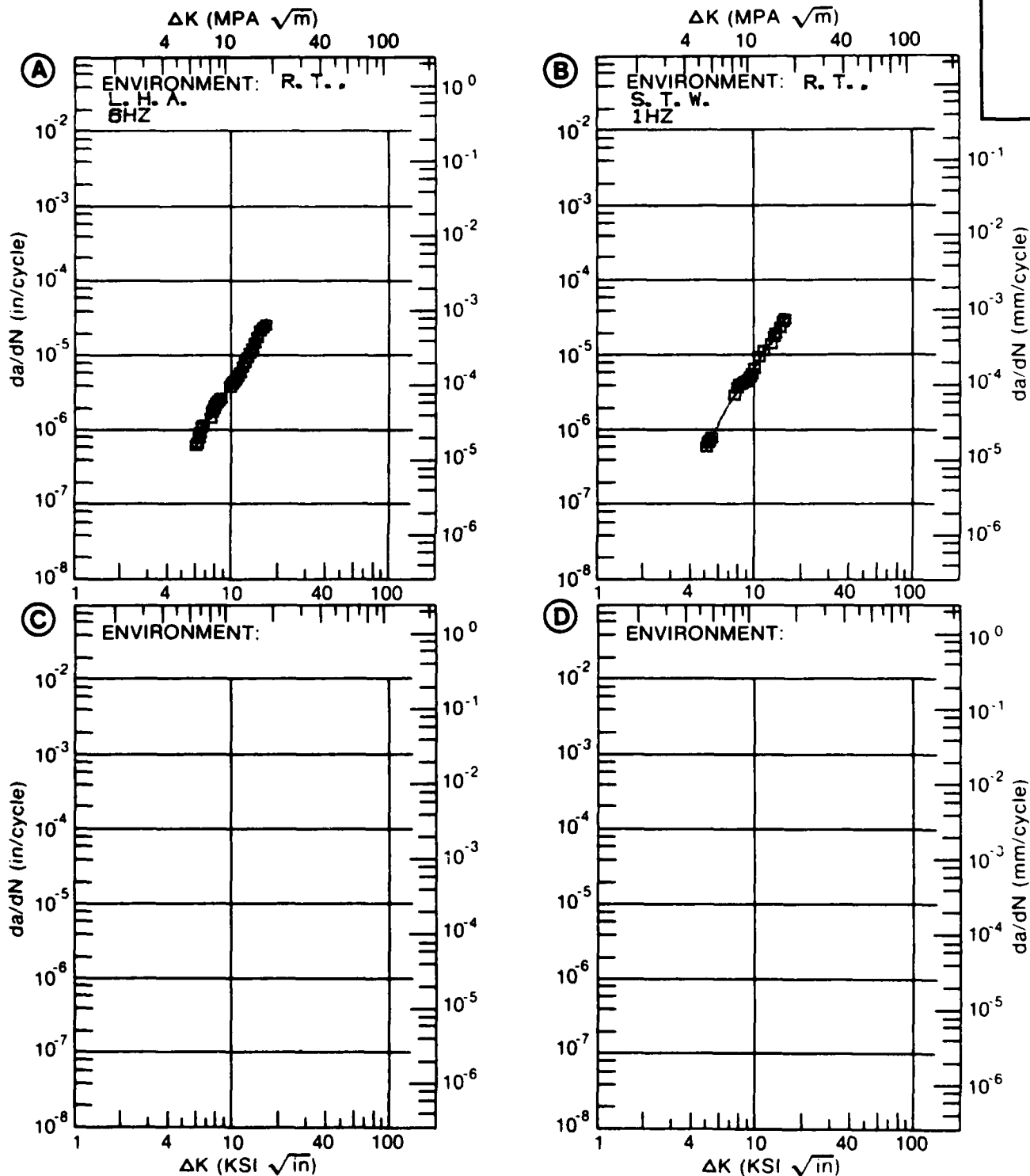


Figure 7.10.3.31

TABLE 7.10.3.32

**FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR**

**DATA ASSOCIATED WITH FIGURE 7.10.3.32 INDICATING EFFECT**

**OF STRESS RATIO**

MATERIAL: ALUMINUM 2219  
CONDITION: T852  
ENVIRONMENT: R. T. , L. H. A.

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		R=+0.08			
DELTA K MIN	A: 6.55	1.29			
	B:				
	C:				
	D:				
	7.00	1.36			
	8.00	1.58			
	9.00	1.90			
	10.00	2.35			
	13.00	5.00			
DELTA K MAX	A: 14.88	8.55			
	B:				
	C:				
	D:				

ROOT MEAN SQUARE 18.44  
PERCENT ERROR

LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25 1  
SUMMARY 1.25-2.0  
(NP/NA) >2.0

CONDITION/HT: T852  
 FORM: 6.00" TH BILLET  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 FREQUENCY: 6.00 HZ  
 ENVIRONMENT: R. T., L. H. A.

YIELD STRENGTH: 50.0 KSI  
 ULT. STRENGTH: 65.0 KSI  
 SPECIMEN THK: 0.997"  
 SPECIMEN WIDTH: 6.190"  
 REFERENCES: 85837

ALUM.  
 ALLOY

2219

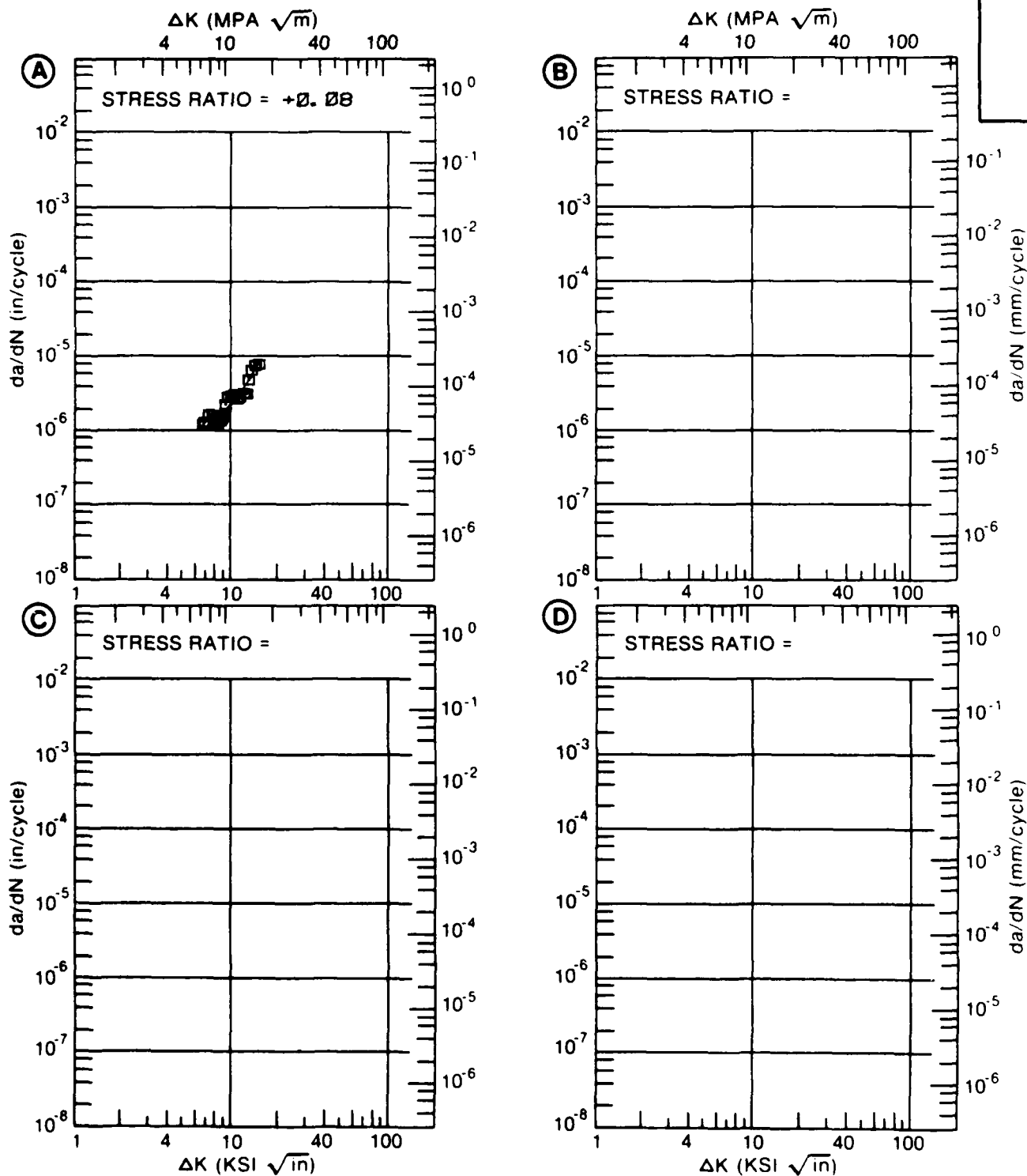


Figure 7.10.3.32

TABLE 7.10.3.33

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTORDATA ASSOCIATED WITH FIGURE 7.10.3.33 INDICATING EFFECT  
OF ENVIRONMENT

MATERIAL: ALUMINUM		2219			
CONDITION: T852					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		E= R. T.	E= R. T.		
		DRY AIR, 2-20HZ	S. T. W. , 20HZ		
DELTA K MIN	A:	5.73	.518		
	B:	5.20	1.60		
	C:				
	D:				
	6.00	.633	2.38		
	7.00	1.25	3.70		
	8.00	2.22	5.42		
	9.00	3.63	7.58		
	10.00	5.49	10.2		
DELTA K MAX		13.00	13.3	20.1	
		16.00	21.6	32.2	
		20.00	27.7		
	A:	20.09	27.7		
	B:	16.06	32.4		
	C:				
	D:				
ROOT MEAN SQUARE		24.73	16.63		
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25				
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION/HT: T852  
 FORM: 2.00" TH FORGING  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 STRESS RATIO: +0.33  
 FREQUENCY:

YIELD STRENGTH: 50.7 KSI  
 ULT. STRENGTH: 65.0 KSI  
 SPECIMEN THK: 0.750- 1.000"  
 SPECIMEN WIDTH: 3.805"  
 REFERENCES: AL001

ALUM.  
 ALLOY

2219

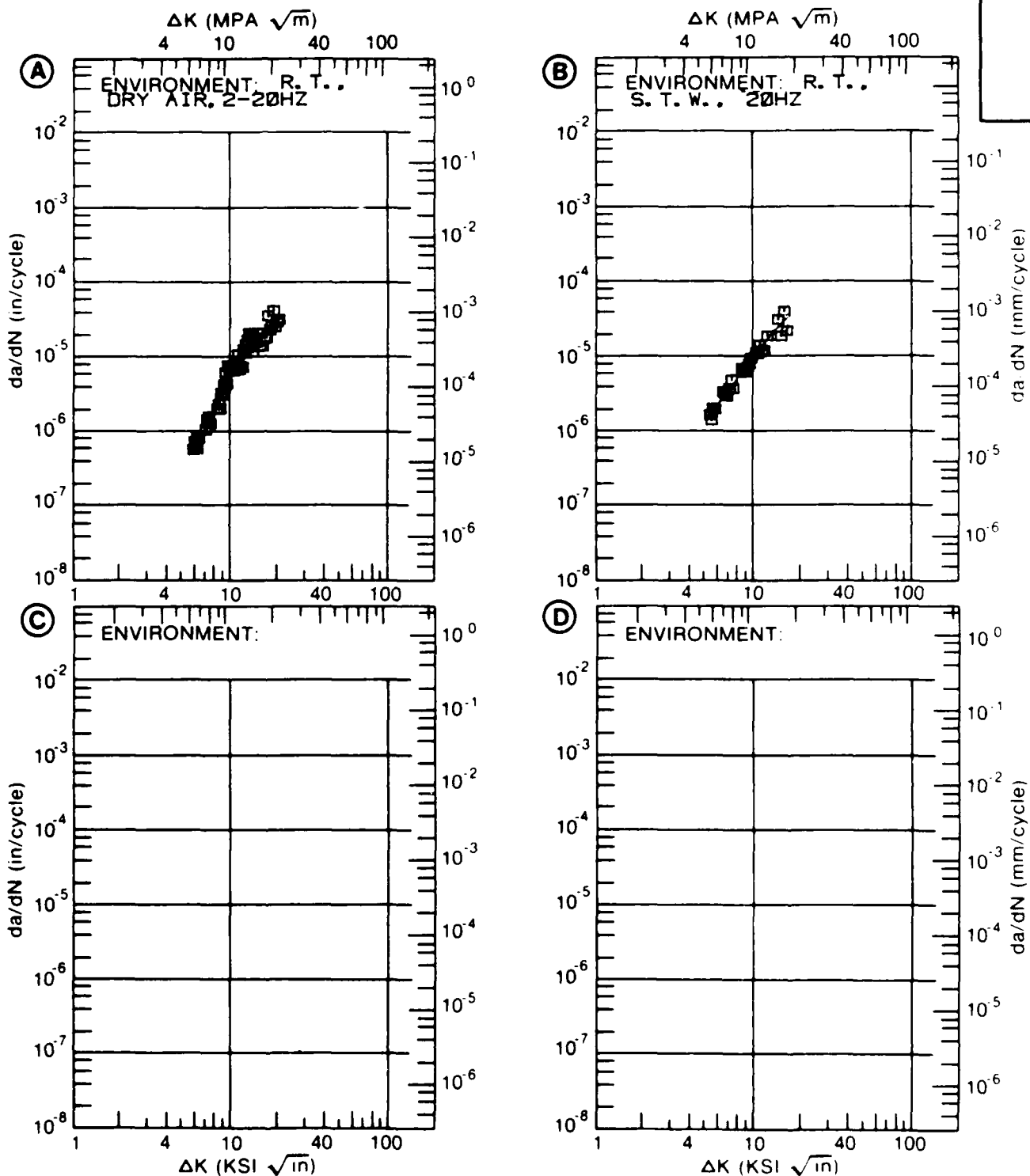


Figure 7.10.3.33



TABLE 7.10.3.34

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.10.3.34 INDICATING EFFECT

## OF ENVIRONMENT

MATERIAL: ALUMINUM  
CONDITION: T852

2219

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R. T. DRY AIR	E= R. T. H. H. A.	E= R. T. S. T. W.	
DELTA K	A: 5.72	.560			
MIN	B: 5.75		.963		
	C: 5.70			1.96	
	D:				
	6.00	.762	1.17	2.28	
	7.00	1.75	2.20	3.54	
	8.00	3.10	3.63	5.13	
	9.00	4.84	5.58	7.17	
	10.00	7.08	8.32	9.83	
	13.00	20.8	26.8	24.3	
	16.00	69.7	92.8	59.8	
	20.00	480.		204.	
DELTA K	A: 20.32	568.			
MAX	B: 19.72		500.		
	C: 20.69			253.	
	D:				
ROOT MEAN SQUARE		27.82	28.49	27.22	
PERCENT ERROR					

LIFE 0.0-0.5  
 PREDICTION 0.5-0.8  
 RATIO 0.8-1.25  
 SUMMARY 1.25-2.0  
 (NP/NA) >2.0

CONDITION/HT: T852  
 FORM: 2.00" TH FORGING  
 SPECIMEN TYPE: CT  
 ORIENTATION: T-L  
 STRESS RATIO: +0.33  
 FREQUENCY: 2.00- 20.00 HZ

YIELD STRENGTH: 50.6 KSI  
 ULT. STRENGTH: 66.5 KSI  
 SPECIMEN THK: 1.000"  
 SPECIMEN WIDTH: 3.805"  
 REFERENCES: AL001

ALUM.  
ALLOY

2219

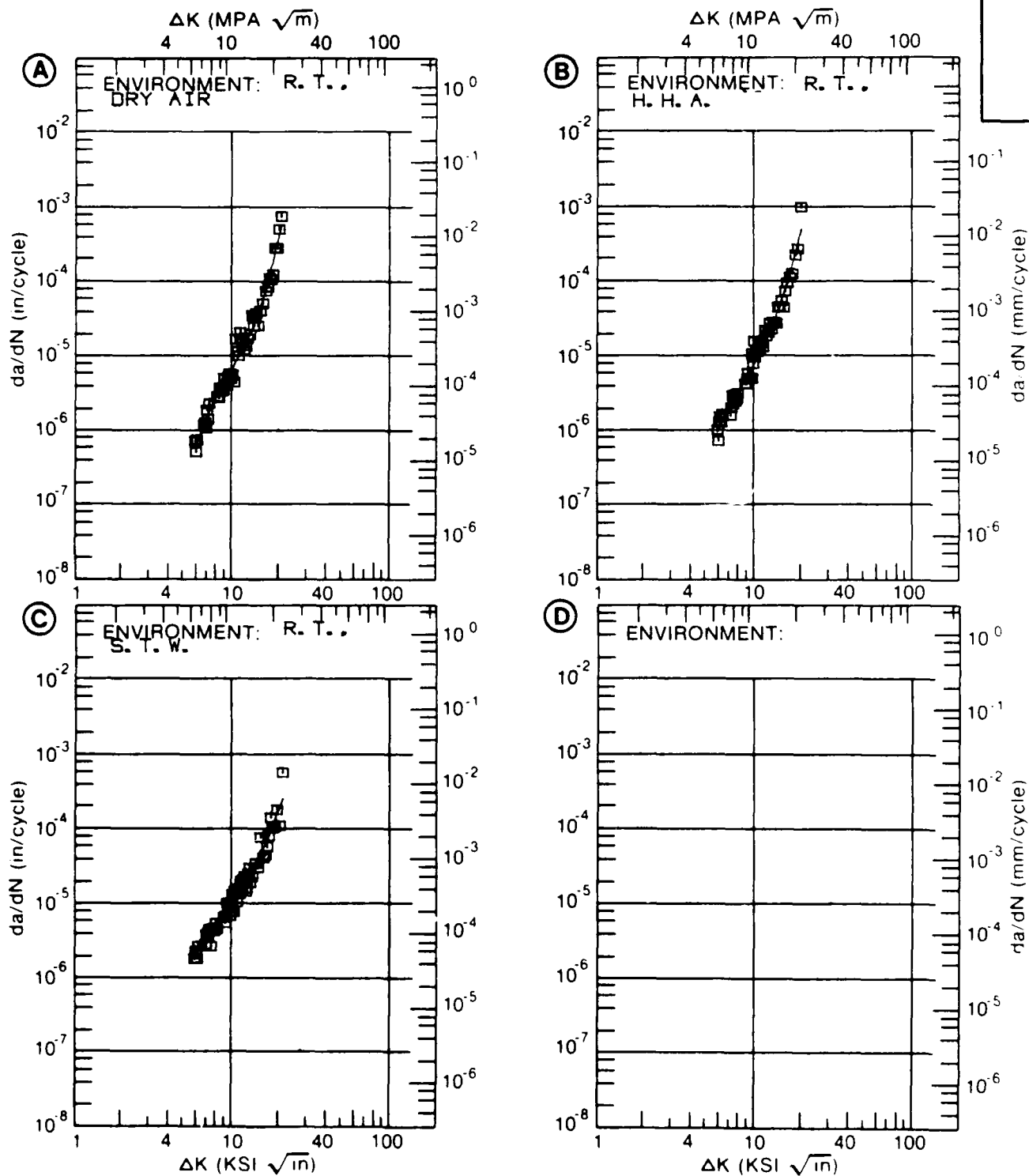


Figure 7.10.3.24

TABLE 7.10.3.35

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTORDATA ASSOCIATED WITH FIGURE 7.10.3.35 INDICATING EFFECT  
OF ENVIRONMENT

MATERIAL: ALUMINUM		2219			
CONDITION: T852					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		E= R. T.	E= R. T.		
		DRY AIR	S. T. W.		
DELTA K MIN	A:	5.69	.482		
	B:	5.69		1.34	
	C:				
	D:				
	6.00	.615	1.64		
	7.00	1.08	2.71		
	8.00	1.53	3.89		
	9.00	1.96	5.09		
	10.00	2.38	6.28		
	13.00	4.01	9.87		
DELTA K MAX	A:	14.60	5.51		
	B:	16.00		13.9	
	C:				
	D:				
ROOT MEAN SQUARE		12.80	16.11		
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25				
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION/HT: T852  
 FORM: 5.50" TH FORGING  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 STRESS RATIO: +0.33  
 FREQUENCY: 20.00 HZ

YIELD STRENGTH: 49.2 KSI  
 ULT. STRENGTH: 62.5 KSI  
 SPECIMEN THK: 1.000"  
 SPECIMEN WIDTH: 3.805"  
 REFERENCES: AL001

ALUM.  
 ALLOY

2219

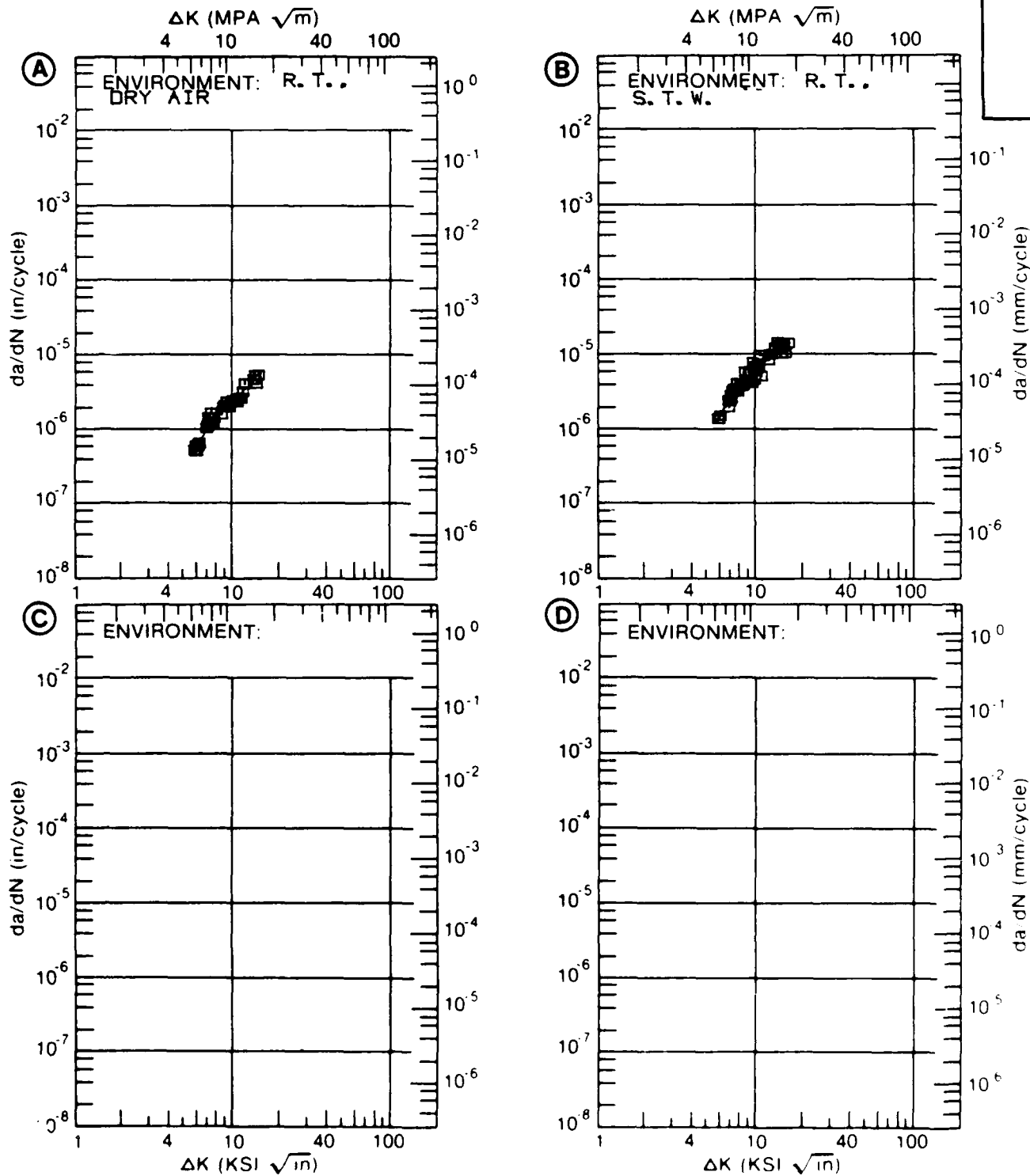


Figure 7.10.3.5

TABLE 7.10.3.36

**FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR**

**DATA ASSOCIATED WITH FIGURE 7.10.3.36 INDICATING EFFECT**

**OF ENVIRONMENT**

<b>MATERIAL: ALUMINUM</b>		<b>2219</b>			
<b>CONDITION: T852</b>					
<b>DELTA K</b> <b>(KSI*IN**1/2)</b>		<b>DA/DN (10**-6 IN. /CYCLE)</b>			
		<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
		<b>E= R. T.</b>	<b>E= R. T.</b>		
		<b>DRY AIR, 40HZ</b>	<b>S. T. W., 20HZ</b>		
<b>DELTA K</b> <b>MIN</b>	<b>A:</b>	3.22	.0513		
	<b>B:</b>	9.03	6.82		
	<b>C:</b>				
	<b>D:</b>				
		3.50	.0854		
		4.00	.165		
		5.00	.363		
		6.00	.599		
		7.00	.920		
		8.00	1.43		
<b>DELTA K</b> <b>MAX</b>	<b>A:</b>	17.51	250.		
	<b>B:</b>	15.40	53.6		
	<b>C:</b>				
	<b>D:</b>				
<b>ROOT MEAN SQUARE</b>		<b>29.30</b>	<b>20.39</b>		
<b>PERCENT ERROR</b>					
<b>LIFE</b>		<b>0.0-0.5</b>			
<b>PREDICTION</b>		<b>0.5-0.8</b>			
<b>RATIO</b>		<b>0.8-1.25</b>			
<b>SUMMARY</b>		<b>1.25-2.0</b>			
<b>(NP/NA)</b>		<b>&gt;2.0</b>			

CONDITION/HT: T852  
 FORM: 5.50" TH FORGING  
 SPECIMEN TYPE: CT  
 ORIENTATION: T-L  
 STRESS RATIO: +0.33  
 FREQUENCY:

YIELD STRENGTH: 46.4 KSI  
 ULT. STRENGTH: 61.6 KSI  
 SPECIMEN THK: 0.250"  
 SPECIMEN WIDTH: 2.550"  
 REFERENCES: AL001

ALUM.  
 ALLOY

2219

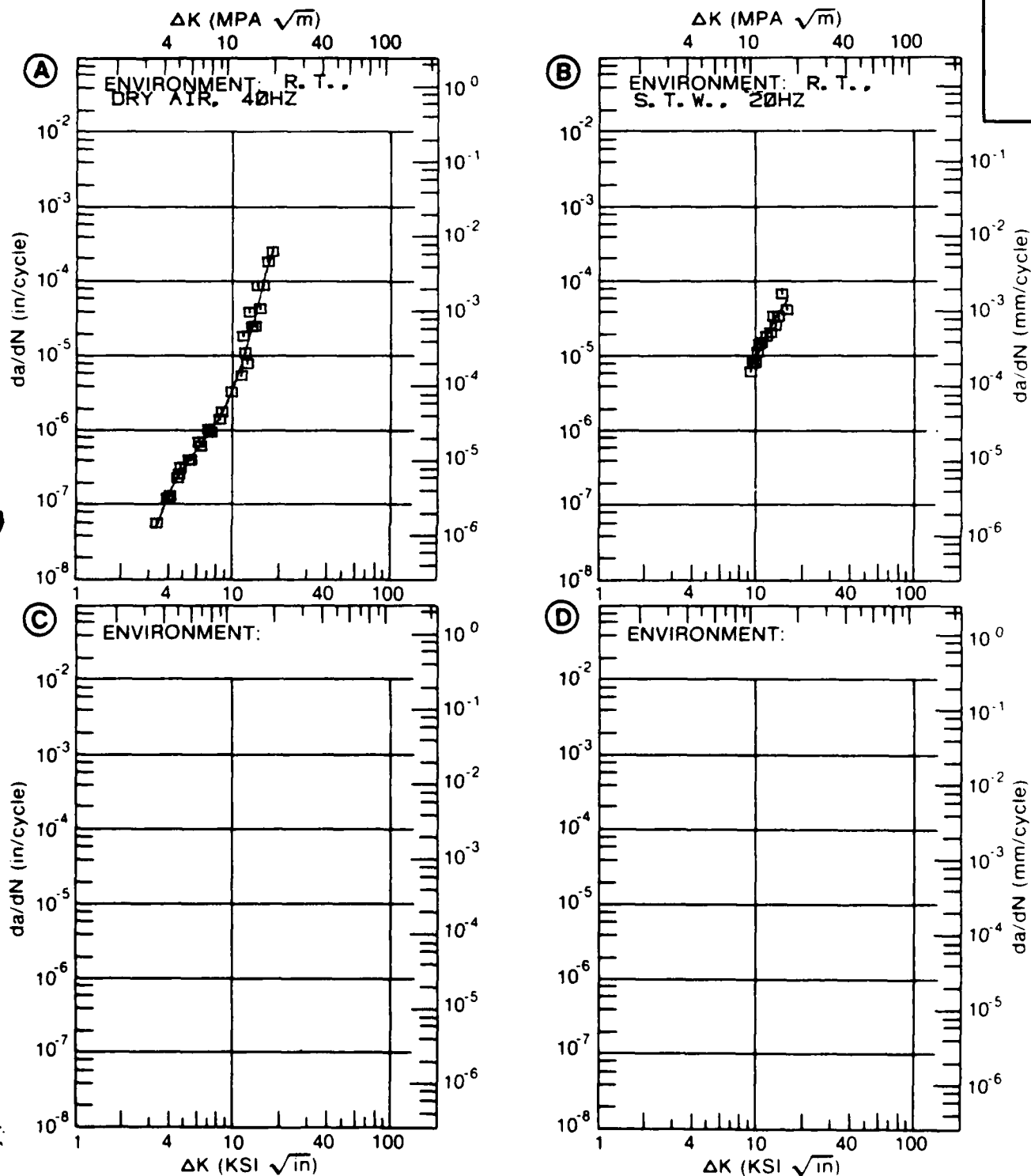


Figure 7.10.3.36

TABLE 7.10.3.37

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.10.3.37 INDICATING EFFECT

## OF ENVIRONMENT

MATERIAL: ALUMINUM		2219			
CONDITION: T852					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R. T. : DRY AIR	E= R. T. H. H. A.	E= R. T. S. T. W.	
DELTA K	A: 5.69	.708			
MIN	B: 5.75		1.50		
	C: 5.61			2.40	
	D:				
	6.00	.956	1.84	3.15	
	7.00	1.89	3.44	5.25	
	8.00	3.00	5.55	7.74	
	9.00	4.48	8.51	11.1	
	10.00	6.78	13.0	16.5	
	13.00	34.2	56.2	74.1	
	16.00	340.		670.	
DELTA K	A: 16.06	359.			
MAX	B: 15.13		197.		
	C: 16.29			1021.	
	D:				
ROOT MEAN SQUARE		30.43	23.20	18.36	
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25				
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION/HT: T852  
 FORM: 5.50" TH FORGING  
 SPECIMEN TYPE: CT  
 ORIENTATION: T-L  
 STRESS RATIO: +0.33  
 FREQUENCY: 2.00- 20.00 HZ

YIELD STRENGTH: 46.4 KSI  
 ULT. STRENGTH: 61.6 KSI  
 SPECIMEN THK: 1.000"  
 SPECIMEN WIDTH: 3.805"  
 REFERENCES: AL001

ALUM.  
ALLOY

2219

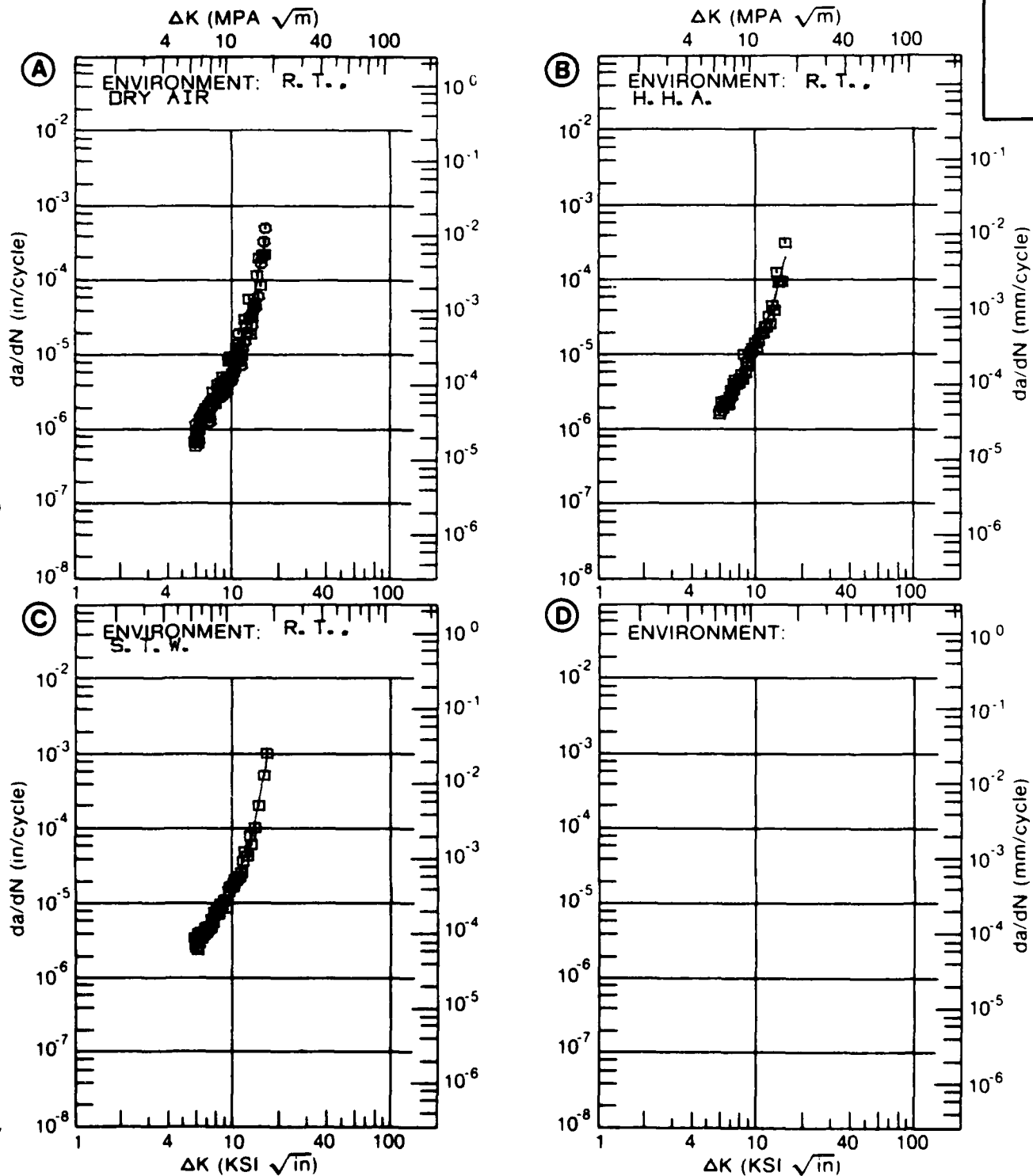


Figure 7.10.3.37



TABLE 7.10.3.38

**FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR**

**DATA ASSOCIATED WITH FIGURE 7.10.3.38 INDICATING EFFECT  
OF ENVIRONMENT**

MATERIAL: ALUMINUM		2219			
CONDITION: T852					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		E= R. T. DRY AIR	E= R. T. H. H. A.	E= R. T. S. T. W.	
DELTA K	A: 5.73	.915			
MIN	B: 5.75		1.40		
	C: 5.72			2.15	
	D:				
	6.00	1.19	1.88	2.91	
	7.00	2.29	4.19	5.89	
	8.00	3.46	6.71	8.78	
	9.00	4.93	9.56	12.0	
	10.00	7.32	13.5	16.6	
	13.00	41.9	54.7	74.6	
	16.00		477.		
DELTA K	A: 15.83	517.			
MAX	B: 16.06		502.		
	C: 15.97			835.	
	D:				
ROOT MEAN SQUARE		30.74	25.21	27.85	
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25				
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION/HT: T852  
 FORM: 5.50" TH FORGING  
 SPECIMEN TYPE: CT  
 ORIENTATION: S-L  
 STRESS RATIO: +0.33  
 FREQUENCY: 2.00- 20.00 HZ

YIELD STRENGTH: 47.2 KSI  
 ULT. STRENGTH: 62.3 KSI  
 SPECIMEN THK: 1.000"  
 SPECIMEN WIDTH:  
 REFERENCES: AL001

ALUM.  
ALLOY

2219

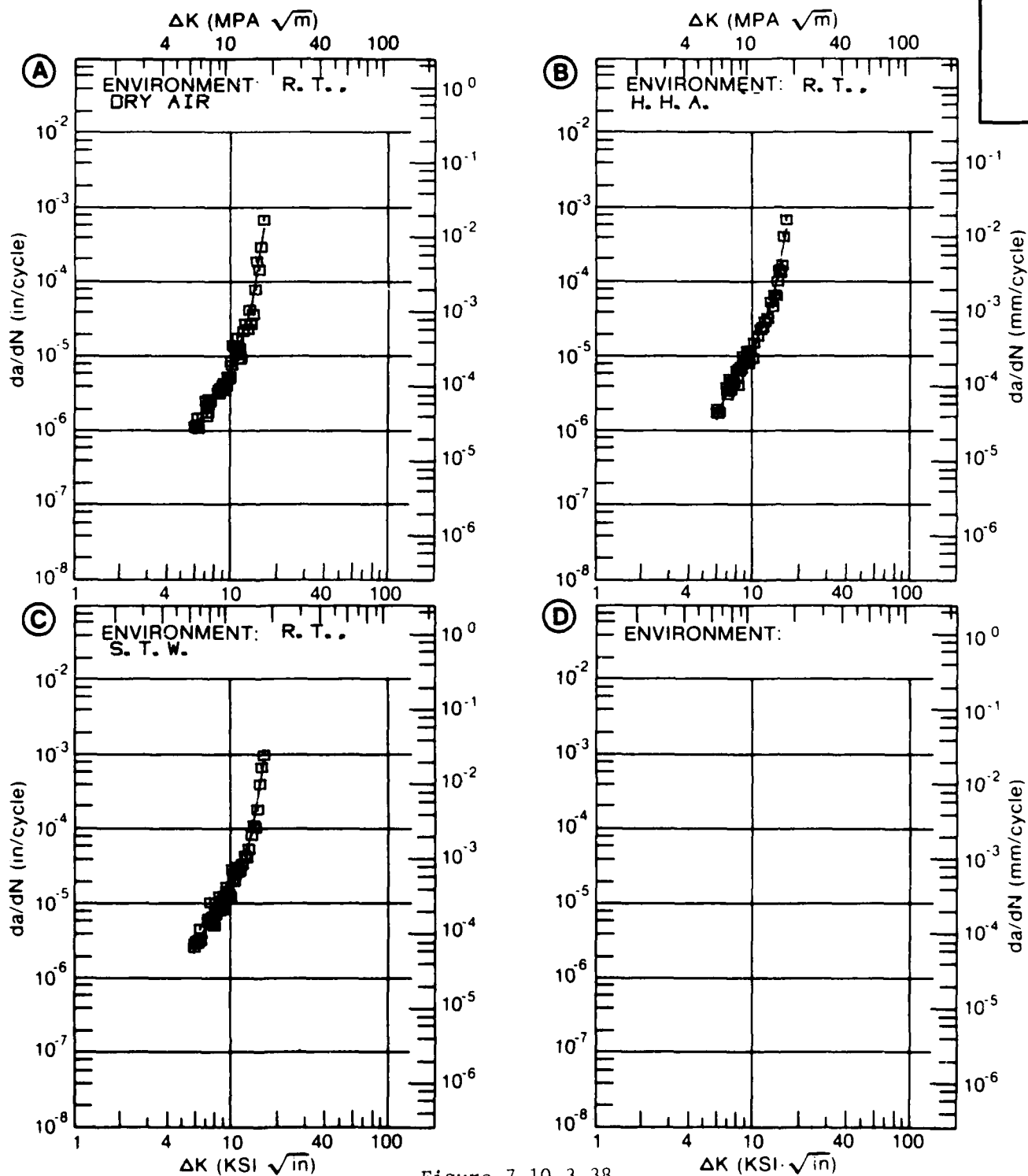


Figure 7.10.3.38

TABLE 7.10.3.39

SUSTAINED CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.10.3.39 INDICATING EFFECT

OF ENVIRONMENT

MATERIAL: ALUMINUM  
CONDITION: T37

2219

K MAX  
(KSI\*IN\*\*1/2)

DA/DT (10\*\*-6 IN/HOUR)

A

B

C

D

E:-

WET 3X/DAY WITH  
3 5% NACLK MAX  
MINA: 20.00 : 411.  
B:  
C:  
D:25.00 : 661.  
30.00 : 917.  
35.00 : 1171.  
40.00 : 1423.  
50.00 : 1933.  
60.00 : 2474.  
70.00 : 3075.K MAX  
MAXA: 80.00 : 3764.  
B:  
C:  
D:ROOT MEAN SQUARE  
PERCENT ERROR

2.84

CONDITION/HT: T37  
 FORM: 1.5"TH PLATE  
 SPECIMEN TYPE: DCB  
 ORIENTATION: S-L  
 YIELD STRENGTH:  
 ULT. STRENGTH:

SPECIMEN THK: 1.000"  
 SPECIMEN WIDTH: 5.000"  
 CRACK LENGTH ( $A_0$ ):  
 $K_{ISCC}$ :  
 REFERENCES: 78313

ALUM.  
 ALLOY

2219

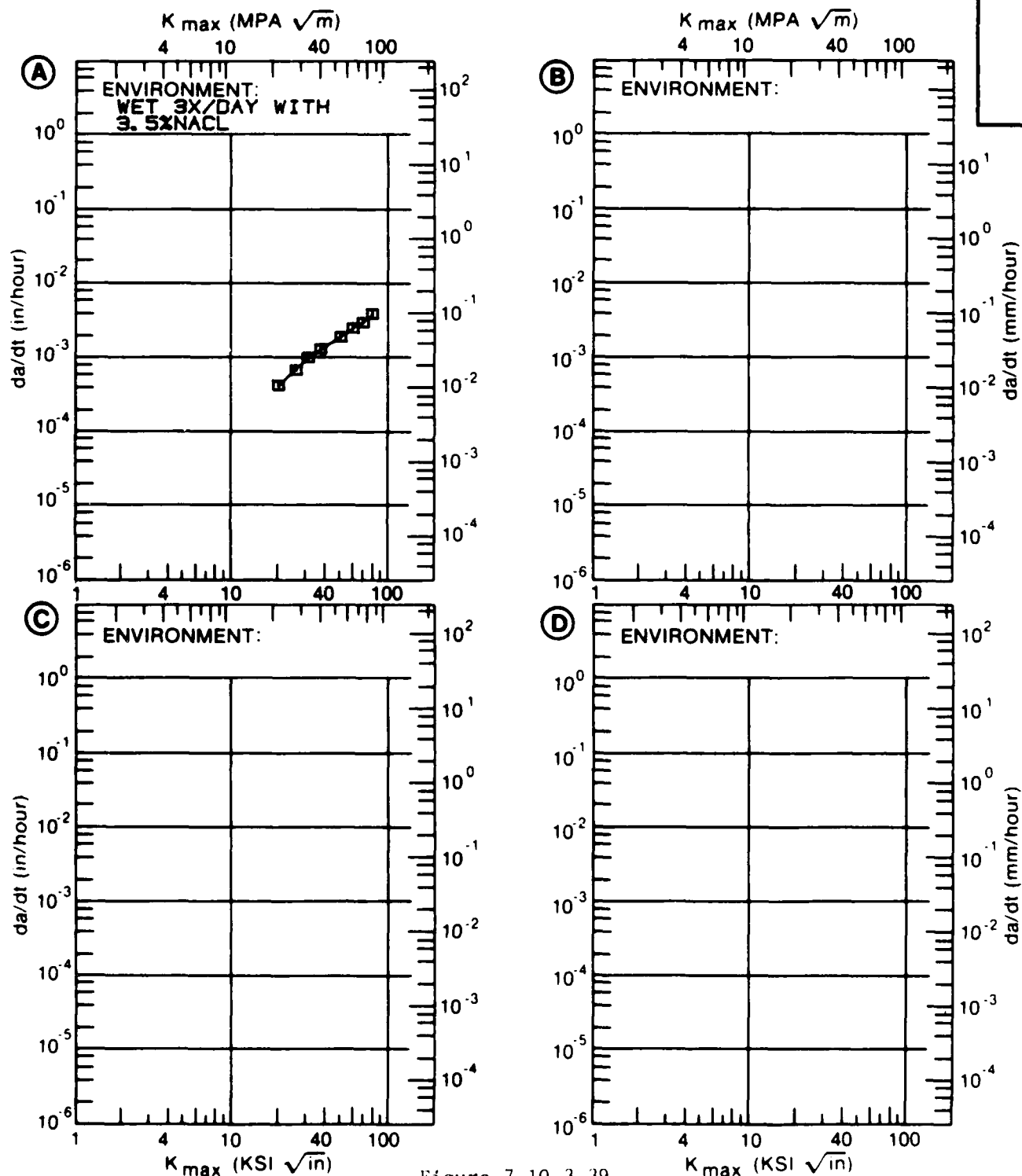


Figure 7.10.3.39

Table 7.10.3.40

CONDITION	ALUMINUM		TEST SPEC YIELD (KSI)	STR ENVIRONMENT	2219		K(18CC)		STAN DEV	TEST TIME (MIN)	DATE REFER	
	--PRODUCT-- FORM THICK (IN)	TEMP (F)			WIDTH (IN)	THICK (IN)	SPECIMEN- THICK DESIGN (IN) (S=50)	CRACK LENGTH K(G) (IN) (KBI+SORT IN)				MEAN
T37	P	2.00	R. T.	S-L	42.1	INDUSTRIAL ATM	2.000	1.000	CT	27.10	13.00	1973 86688
T37	P	2.00	R. T.	S-L	42.1	SALT-DICHRO- MATE-ACETATE	2.000	1.000	CT	27.10	9.00	1973 86688
T37	P	2.00	R. T.	S-L	42.1	SEACOAST ATM	2.000	1.000	CT	27.10	13.00	1973 86688
T851	P	1.75 1.75	R. T.	L-T	50.0 50.0	F. C. S.	5.500 5.500	1.000 1.000	DCB	32.00 32.00	30.50 27.50	75240 1976 R1006 75240 1976 R1006
T851	P	1.75 1.75 1.75	R. T.	L-T	50.0 50.0 50.0	S. C. S.	5.500 5.500 5.500	1.000 1.000 1.000	DCB	32.00 32.00 32.00	27.00 37.00 39.00	75240 1976 R1006 59100 1976 R1006 61680 1976 R1006
T851	P	1.75 1.75	R. T.	L-T	50.0 50.0	S. T. W.	5.500 5.500	1.000 1.000	DCB	32.00 32.00	33.00 36.00	51720 1976 R1006 83520 1976 R1006
T851	P	1.75 1.75	R. T.	T-L	48.0	S. T. W.	5.500 5.500	1.000 1.000	DCB	30.00 30.00	27.00 29.50	51720 1976 R1006 83520 1976 R1006
T851	P	1.00	R. T.	S-L	58.0	3.5 PCT NACL	4.000	1.000	DCB	27.00	18.00	1968 84331
T87	P	2.00	R. T.	S-L	57.7	INDUSTRIAL ATM	2.000	1.000	CT	19.60	19.00	1973 86688
T87	P	2.00	R. T.	S-L	57.7	SALT-DICHRO- MATE-ACETATE	2.000	1.000	CT	19.60	19.00	1973 86688
T87	P	2.00	R. T.	S-L	57.7	SEACOAST ATM	2.000	1.000	CT	19.60	19.00	1973 86688

TABLE 7.11.3.1

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.11.3.1 INDICATING EFFECT

## OF STRESS RATIO

MATERIAL: ALUMINUM 2324  
 CONDITION: T39  
 ENVIRONMENT: R. T., H. H. A.

DELTA K (KSI*IN**1/2)		DA/DN (10**--6 IN./CYCLE)			
		A	B	C	D
		R=+0.33			
DELTA K MIN	A:	2.65	.0344		
	B:				
	C:				
	D:				
	3.00	.0994			
	3.50	.178			
	4.00	.222			
	5.00	.462			
	6.00	1.30			
	7.00	2.72			
	8.00	4.66			
	9.00	7.09			
	10.00	10.0			
	13.00	23.2			
DELTA K MAX	A:	14.47	33.7		
	B:				
	C:				
	D:				
ROOT MEAN SQUARE		15.79			
PERCENT ERROR					

LIFE	0.0-0.5	
PREDICTION	0.5-0.8	1
RATIO	0.8-1.25	2
SUMMARY	1.25-2.0	
(NP/NA)	>2.0	

CONDITION/HT: T39  
 FORM: 1.25" TH PLATE  
 SPECIMEN TYPE: WOL  
 ORIENTATION: L-T  
 FREQUENCY: 25.00  
 ENVIRONMENT: R. T., H. H. A.

YIELD STRENGTH:  
 ULT. STRENGTH:  
 SPECIMEN THK: 0.249- 0.251"  
 SPECIMEN WIDTH: 2.500- 2.547"  
 REFERENCES: AL011

ALUM.  
 ALLOY

2324

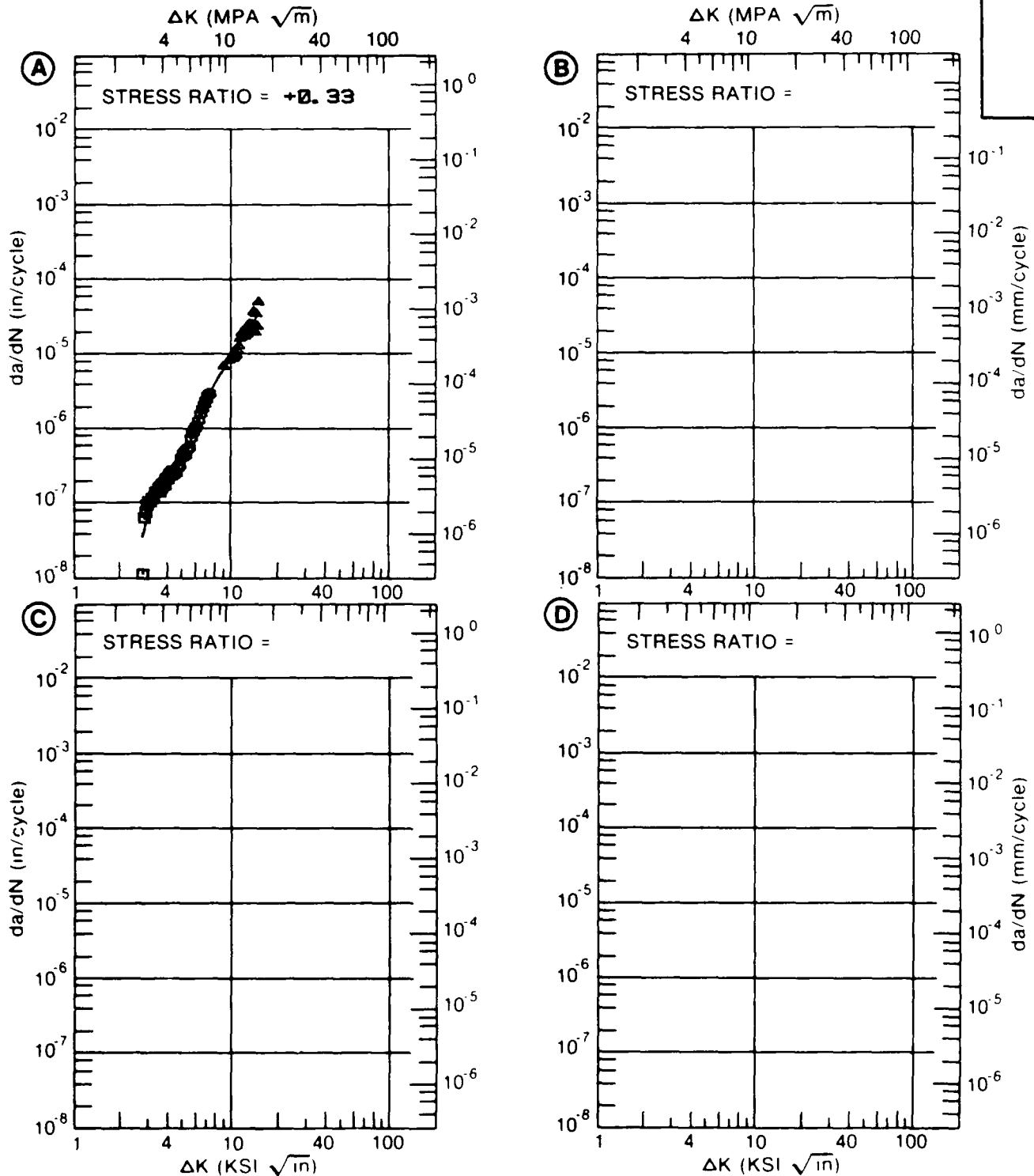


Figure 7.11.3.1

Table 7.12.1.1

MEAN PLANE STRAIN FRACTURE TOUGHNESS DATA OF  
ALUMINUM ALLOY 2419 AT ROOM TEMPERATURE

CONDITION/HT	MEAN K <sub>IC</sub> ± STANDARD (KSI SQRT(IN)) DEVIATION		(NUMBER OF SPECIMENS)	
	PLATE			
	L-I	I-L	S-L	
T051	42.6 ± 5.3 (23)	37.2 ± 4.2 (32)	24.8 ± 2.5 (3)	



Table 7.12.2.1

CONDITION	--PRODUCT--		TEST SPECIMEN ORIENT	YIELD STRENGTH (KSI)	ALUMINUM		2419		K(1C)		CRACK LENGTH (IN)	2.5* K(1C)/(TYS)**2 (IN)	K(1C) MEAN DEV (KSI*SQRT IN)	STAN DEV	DATE	REFER
	FORM	THICK (IN)			THICK (IN)	WIDTH (IN)	SPECIMEN		A							
							DESIGN	THICK (IN)		B						
T851	P	2.55	R.T.	L-T	50.1	6.017	2.506	CT	3.129	2.40	49.10				1978	MPC01
		2.55			50.1	5.959	2.583	CT	3.158	1.98	44.60				1978	MPC01
		2.90			50.5	6.057	2.945	CT	3.089	2.11	46.90				1978	MPC01
		2.90			50.7	6.053	2.900	CT	3.087	1.84	43.90				1978	MPC01
		2.90			50.8	6.041	2.897	CT	3.081	1.98	45.50				1978	MPC01
		2.90			51.1	6.052	2.905	CT	3.026	1.44	39.20				1978	MPC01
		2.90			51.4	6.020	2.947	CT	3.070	1.60	41.30				1978	MPC01
		2.00			51.7	4.000	2.000	CT	----	1.17	35.30				1975	UD004
		2.00			51.7	4.000	2.000	CT	----	1.09	34.20				1975	UD004
		2.00			51.7	4.000	2.000	CT	----	1.14	34.90				1975	UD004
		2.55			52.1	3.026	1.501	CT	1.513	1.29	38.00				1978	MPC01
		2.90			52.1	5.962	2.934	CT	3.100	2.30	50.20				1978	MPC01
		2.90			52.2	5.967	2.937	CT	3.103	2.16	48.90				1978	MPC01
		2.90			52.4	5.933	2.375	CT	2.567	1.68	43.00				1978	MPC01
		2.50			52.7	5.998	2.519	CT	3.059	1.64	43.00				1978	MPC01
		2.50			53.0	6.059	2.598	CT	3.090	2.50	53.00				1978	MPC01
3.00			53.2	4.034	1.999	CT	2.017	1.36	39.70				1978	MPC01		
3.00			53.2	4.035	1.999	CT	2.058	1.44	40.70				1978	MPC01		
2.90			53.4	4.991	2.374	CT	2.624	1.84	46.40				1978	MPC01		
2.90			53.8	4.992	1.750	CT	2.596	1.19	36.90				1978	MPC01		
2.90			54.0	6.025	2.933	CT	3.193	1.98	48.90				1978	MPC01		
2.90			54.9	5.019	1.750	CT	2.610	1.26	39.00				1978	MPC01		
2.90			55.8	5.006	1.750	CT	2.603	1.19	38.60	42.6/	5.3		1978	MPC01		
T851	P	2.00	200	L-T	47.6	4.000	2.000	CT	----	1.19	32.90				1975	UD004
		2.00			47.6	4.000	2.000	CT	----	1.11	31.70				1975	UD004
		2.00			47.6	4.000	2.000	CT	----	1.17	32.60	32.4/	0.6		1975	UD004
T851	P	2.00	300	L-T	43.8	4.000	2.000	CT	----	1.33	31.90				1975	UD004
		2.00			43.8	4.000	2.000	CT	----	1.35	32.20				1975	UD004
		2.00			43.8	4.000	2.000	CT	----	1.32	31.80	32.0/	0.2		1975	UD004
T851	P	1.75	R.T.	T-L	46.8	5.033	1.761	CT	2.567	1.48	36.30				1978	MPC01
		1.75			47.0	5.012	1.758	CT	2.556	1.40	35.70				1978	MPC01
		1.75			47.0	2.991	1.399	CT	1.589	1.19	32.80				1978	MPC01
		1.75			47.2	4.994	1.762	CT	2.597	1.52	37.10				1978	MPC01
		1.75			47.4	3.019	1.397	CT	1.570	1.29	34.20				1978	MPC01
1.75			47.4	4.994	1.757	CT	2.597	1.52	37.10				1978	MPC01		
1.75			47.4	4.985	1.761	CT	2.592	1.52	37.00				1978	MPC01		

Table 7.12.2.1 (Con't)

CONDITION	ALUMINUM				2419				K(1C)			DATE	REFER
	---PRODUCT--- FORM	THICK (IN)	TEST SPECIMEN ORIENT	YIELD STRENGTH (KSI)	-----SPECIMEN-----			CRACK LENGTH (IN)	2.5* K(1C)/TYS)**2 (IN)	K(1C) MEAN DEV (KSI*SQRT IN)			
					WIDTH (IN)	THICK (IN)	DESIGN						
					W	B	A						
TB51	P	1.75	R. T.	T-L	47.6	5.004	1.762	CT	2.602	1.60	38.10	1978 MPC01	
		1.75			47.6	2.994	1.397	CT	1.587	1.29	34.70	1978 MPC01	
		1.75			47.6	4.987	1.762	CT	2.593	1.60	38.20	1978 MPC01	
		1.75			47.7	2.995	1.398	CT	1.587	1.12	32.10	1978 MPC01	
		1.75			47.7	4.975	1.759	CT	2.587	1.36	35.70	1978 MPC01	
		2.55			49.0	4.998	2.401	CT	2.649	2.11	45.30	1978 MPC01	
		1.75			49.0	2.981	1.402	CT	1.550	1.29	35.30	1978 MPC01	
		2.90			49.2	6.000	2.951	CT	3.180	1.84	42.40	1978 MPC01	
		2.90			49.4	6.028	2.900	CT	3.195	1.48	38.20	1978 MPC01	
		2.90			49.4	6.019	2.896	CT	3.130	2.20	46.50	1978 MPC01	
		2.00			49.7	2.996	1.402	CT	1.558	0.99	31.80	1978 MPC01	
		2.90			49.9	4.982	2.374	CT	2.690	1.60	40.40	1978 MPC01	
		2.90			50.1	6.000	2.940	CT	3.180	1.84	43.30	1978 MPC01	
		2.55			50.3	5.004	2.401	CT	2.652	1.68	41.50	1978 MPC01	
		2.90			50.5	6.014	2.912	CT	3.067	1.08	33.70	1978 MPC01	
		2.90			50.7	5.051	1.747	CT	2.576	1.56	40.30	1978 MPC01	
		2.90			50.9	6.047	2.931	CT	3.205	1.56	40.40	1978 MPC01	
		2.90			51.0	5.946	2.937	CT	3.092	1.22	36.10	1978 MPC01	
		2.90			51.0	4.989	1.747	CT	2.594	1.72	42.40	1978 MPC01	
		2.55			51.1	3.015	1.500	CT	1.568	1.15	34.80	1978 MPC01	
	2.90			51.1	4.989	2.375	CT	2.644	1.36	38.00	1978 MPC01		
	3.00			51.2	4.026	1.996	CT	2.053	0.78	29.10	1978 MPC01		
	2.50			51.2	6.049	2.511	CT	3.085	1.68	42.30	1978 MPC01		
	3.00			51.2	4.016	1.999	CT	2.048	0.78	29.10	1978 MPC01		
	2.90			51.4	5.043	1.746	CT	2.572	1.48	40.00	1978 MPC01		
	2.50			51.4	5.992	2.534	CT	3.166	1.44	39.40	1978 MPC01		
	3.00			51.6	3.022	1.403	CT	1.541	1.22	36.50	1978 MPC01		
	2.90			52.1	5.029	1.747	CT	2.565	1.72	43.40	1978 MPC01		
	3.00			52.3	3.983	1.999	CT	2.071	1.08	34.90	1978 MPC01		
	3.00			52.3	3.979	1.999	CT	2.069	1.19	36.50	1978 MPC01		
	2.55			52.3	5.968	2.501	CT	3.163	1.12	35.10	1978 MPC01		
	2.00			52.5	4.000	2.000	CT	-----	0.85	30.60	1975 UD004		
	2.00			52.5	4.000	2.000	CT	-----	0.89	31.30	1975 UD004		
	2.90			52.5	5.026	1.746	CT	2.563	1.68	43.10	1978 MPC01		
	2.00			52.5	4.000	2.000	CT	-----	0.95	32.30	1975 UD004		
	2.90			52.6	5.051	1.748	CT	2.576	1.40	39.60	1978 MPC01		
	2.90			52.8	4.983	1.749	CT	2.641	1.12	35.90	1978 MPC01		
	2.90			52.8	5.048	1.750	CT	2.625	0.99	33.40	1978 MPC01		
	2.55			52.9	5.973	2.461	CT	3.046	1.19	36.60	1978 MPC01		

Table 7.12.2.1 (Con't)

CONDITION	ALUMINUM				2419				K(1C)				DATE	REFER
	--PRODUCT--		TEST SPECIMEN ORIENT	YIELD STRENGTH (KSI)	-----SPECIMEN-----		CRACK LENGTH (IN)	2.5* (K(1C)/TVS)**2 (IN)	K(1C) MEAN DEV (KSI*SQRT IN)	K(1C) STAN DEV				
	FORM	THICK (IN)			THICK (IN)	WIDTH (IN)					THICK (IN)	DESIGN		
TBS1	P	2.90	R. T.	T-L	53.5	4.998	1.750	CT	2.649	1.08	35.80	1978	MPC01	
		2.90			53.6	5.985	2.937	CT	3.172	1.80	46.00	1978	MPC01	
		2.90			53.6	5.053	1.790	CT	2.577	1.09	35.00	1978	MPC01	
		2.90			53.7	4.977	2.374	CT	2.638	1.26	38.60	1978	MPC01	
		2.55			53.9	3.020	1.498	CT	1.510	0.87	32.10	1978	MPC01	
	2.90			54.6	5.029	1.747	CT	2.565	1.36	40.70	37.2/	4.2	1978	MPC01
TBS1	P	2.00	200	T-L	47.1	4.000	2.000	CT	----	0.97	29.30	1975	UD004	
		2.00			47.1	4.000	2.000	CT	----	0.94	28.90	1975	UD004	
		2.00			47.1	4.000	2.000	CT	----	0.90	28.8/	0.5	1975	UD004
TBS1	P	2.00	300	T-L	43.2	4.000	2.000	CT	----	1.12	28.90	1975	UD004	
		2.00			43.2	4.000	2.000	CT	----	1.09	28.50	28.7/	0.3	1975
TBS1	P	2.00	R. T.	S-T	51.7	4.000	2.000	CT	----	0.50	23.20	1975	UD004	
		2.00			51.7	4.000	2.000	CT	----	0.47	22.90	1975	UD004	
		2.00			51.7	4.000	2.000	CT	----	0.49	22.90	1975	UD004	
		2.90			52.4	2.006	1.001	CT	1.023	0.52	24.20	1978	MPC01	
		2.90			53.2	1.981	1.001	CT	1.030	0.48	23.80	1978	MPC01	
	2.90			54.4	1.994	1.001	CT	1.037	0.60	26.80	24.0/	1.5	1978	MPC01
TBS1	P	3.00	R. T.	S-L	50.4	1.989	1.000	CT	1.034	0.48	22.90	1978	MPC01	
		3.00			50.4	2.018	0.999	CT	1.029	0.57	24.40	1978	MPC01	
		3.00			51.6	1.994	1.000	CT	0.997	0.70	27.40	24.8/	2.5	1978

TABLE 7.12.3.1

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.12.3.1 INDICATING EFFECT  
OF ENVIRONMENT

MATERIAL: ALUMINUM		2419			
CONDITION: T851					
DELTA K		DA/DN (10**-6 IN. /CYCLE)			
(KSI*IN**1/2)					
		A	B	C	D
		E= R. T.			
		LAB AIR			
DELTA K MIN	A:	6.26	1.28		
	B:				
	C:				
	D:				
		7.00	2.07		
		8.00	3.01		
		9.00	4.35		
		10.00	6.30		
DELTA K MAX		13.00	14.7		
		16.00	24.9		
		20.00	53.9		
	A:	20.00	53.9		
	B:				
	C:				
	D:				
ROOT MEAN SQUARE		18.62			
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25				
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION/HT: T851  
 FORM: 2.00" TH PLATE  
 SPECIMEN TYPE: WOL  
 ORIENTATION: L-T  
 STRESS RATIO: +0.10  
 FREQUENCY: 30.00 HZ

YIELD STRENGTH: 51.7 KSI  
 ULT. STRENGTH: 66.9 KSI  
 SPECIMEN THK: 0.500"  
 SPECIMEN WIDTH: 1.850"  
 REFERENCES: UD004

ALUM.  
 ALLOY

2419

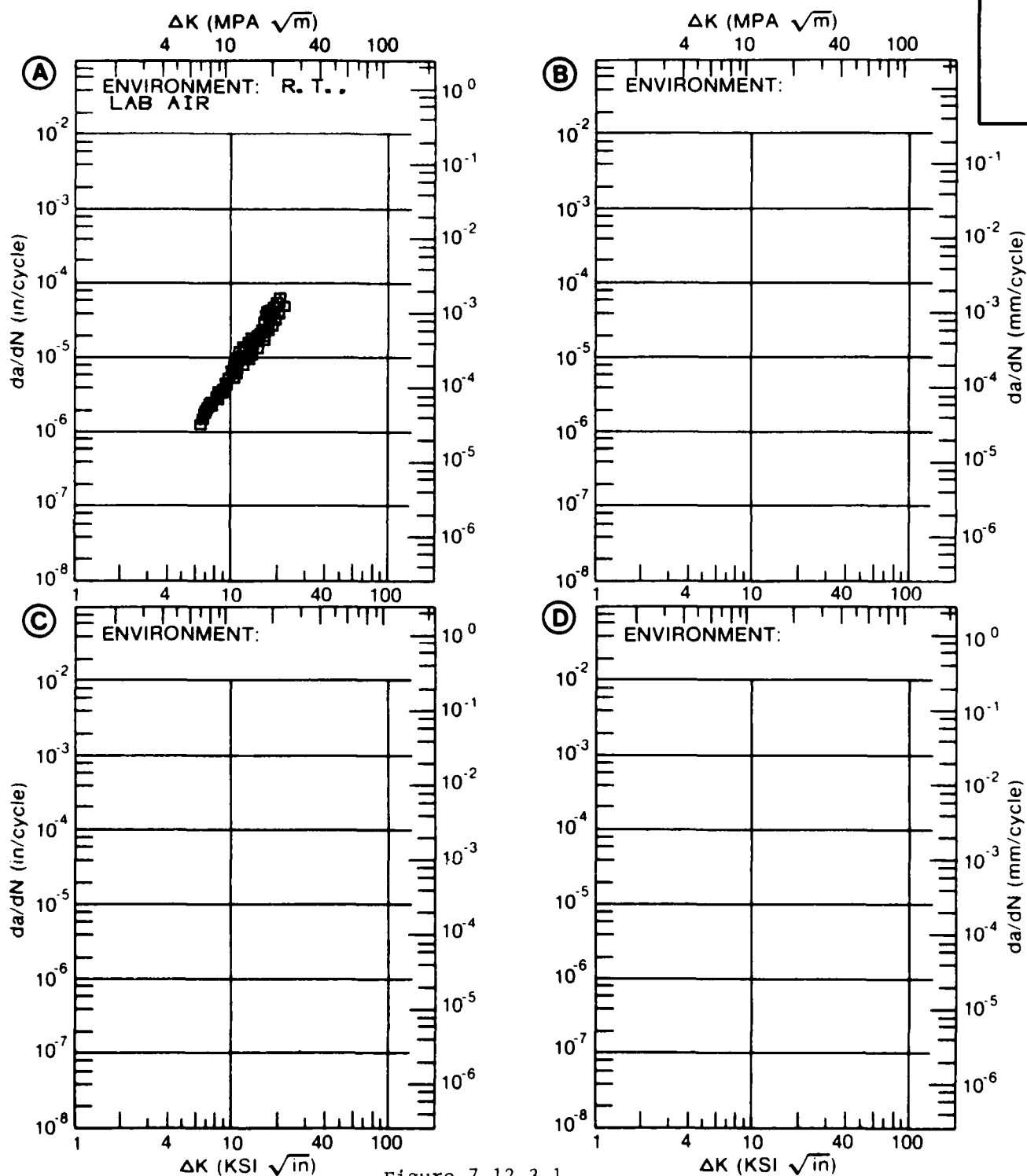


Figure 7.12.3.1

TABLE 7.12.3.2

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.12.3.2 INDICATING EFFECT

OF ENVIRONMENT

MATERIAL: ALUMINUM		2419			
CONDITION: T851					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		E= R. T.			
		LAB AIR			
DELTA K MIN	A:	6.39	.906		
	B:				
	C:				
	D:				
		7.00	1.97		
		8.00	2.68		
DELTA K MAX		9.00	3.94		
		10.00	5.59		
		13.00	10.3		
		16.00	17.1		
	A:	17.33	26.1		
	B:				
ROOT MEAN SQUARE		19.15			
PERCENT ERROR					
LIFE		0.0-0.5			
PREDICTION		0.5-0.8			
RATIO		0.8-1.25			
SUMMARY		1.25-2.0			
(NP/NA)		>2.0			

CONDITION/HT: T851  
 FORM: 2.00" TH PLATE  
 SPECIMEN TYPE: WOL  
 ORIENTATION: T-L  
 STRESS RATIO: +0.10  
 FREQUENCY: 30.00 HZ

YIELD STRENGTH: 52.5 KSI  
 ULT. STRENGTH: 66.6 KSI  
 SPECIMEN THK: 0.500"  
 SPECIMEN WIDTH: 1.850"  
 REFERENCES: UD004

ALUM.  
 ALLOY

2419

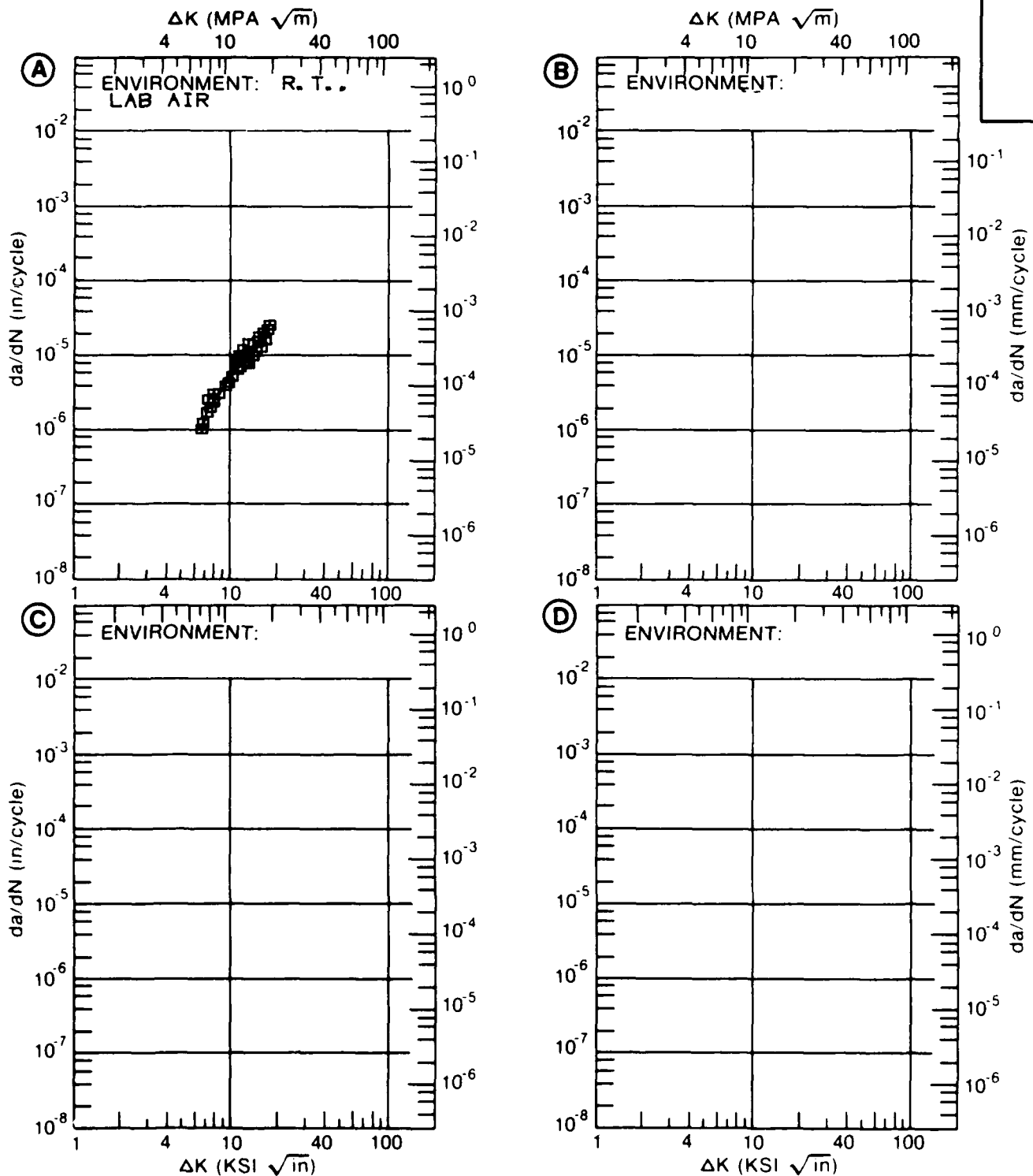


Figure 7.12.3.2

Table 7.13.1.1

MEAN PLANE STRAIN FRACTURE TOUGHNESS DATA OF  
ALUMINUM ALLOY 2018 AT ROOM TEMPERATURE

CONDITION/HT	MEAN K <sub>IC</sub> ± STANDARD (KSI SQRT(IN)) DEVIATION		(NUMBER OF SPECIMENS)	
	PLATE			
	I-I	I-I	I-I	S-L
1651	---	---	---	14.9 ± 1.2 (12)



Table 7.13.2.1

CONDITION	ALUMINUM			2618			K(1C)		K(1C) STAN DEV	DATE	REFER			
	--PRODUCT-- FORM	THICK (IN)	TEST SPECIMEN TEMP ORIENT (F)	YIELD STRENGTH (KSI)	-----SPECIMEN-----		CRACK LENGTH (IN)	2.5* (K(1C)/TVS)**2 (IN)						
					WIDTH (IN)	THICK (IN)						DESIGN A		
T651	P	3 34	R. T.	S-L	54.8	1.990	0.999	CT	1.014	0.21	15.90	1973 86213		
		3 34			54.8	2.000	0.999	CT	1.015	0.21	15.80	1973 86213		
		3 34			55.1	2.000	0.999	CT	1.011	0.23	16.80	1973 86213		
		3 34			55.1	2.000	0.999	CT	1.024	0.22	16.90	1973 86213		
		3 34			56.3	2.000	0.999	CT	1.034	0.16	14.10	1973 86213		
		3 34			56.3	2.000	0.999	CT	1.033	0.16	14.20	1973 86213		
		3 34			56.3	2.000	0.999	CT	1.028	0.15	13.60	1973 86213		
		3 34			56.8	2.000	0.999	CT	1.011	0.15	13.90	1973 86213		
		3 34			56.8	2.000	0.999	CT	1.018	0.14	13.20	1973 86213		
		3 34			57.4	2.000	0.999	CT	1.011	0.19	15.70	1973 86213		
		3 34			59.2	2.000	0.999	CT	1.008	0.15	14.60	1973 86213		
		3 34			59.2	2.000	0.999	CT	1.011	0.15	14.30	1973 86213		
		T651	P	1 37	88	S-L	51.8	1.000	0.500	CT	0.499	0.47	22.90	1973 86213
				1 37			51.8	1.000	0.500	CT	0.503	0.49	23.00	1973 86213
				1 37			51.8	1.000	0.500	CT	0.488	0.40	20.70	1973 86213
										22.1/	1.2			

Table 7.13.2.2

CONDITION	ALUMINUM		2618		K(C)		CRACK LENGTH GROSS STRESS										K(C) STAN			
	--PRODUCT--		TEST SPEC		YIELD		---SPECIMEN---		CRACK LENGTH		GROSS STRESS		K(APP) STAN		K(C) STAN		K(C) STAN			
	FORM	THICK (IN)	TEMP (F)	OR	STR (KSI)	W (IN)	THICK (IN)	INIT (IN)	FINAL (IN)	ONSET (KSI)	MAX (KSI)	K(APP) MEAN (KSI*SQRT IN)	STAN DEV (KSI*SQRT IN)	K(C) MEAN (KSI*SQRT IN)	STAN DEV (KSI*SQRT IN)	DATE	REFER			
						W	B	2A(D)	2A(F)	S(D)	S(MAX)									
BUCKLING OF CRACK EDGES NOT RESTRAINED																				
T61	S	0.06	R.T.	L-T	56.2	2.000	0.064	0.623	0.900	---	36.00	37.87*		49.09*		1973	86213			
		0.06			56.2	2.000	0.064	0.623	0.970	34.10	39.70	37.53*		51.80*		1973	86213			
		0.06			56.2	2.000	0.064	0.622	0.890	32.70	35.70	37.55*		48.25*		1973	86213			
T61	S	0.06	R.T.	T-L	54.2	2.000	0.064	0.621	1.070	32.80	34.10	35.80*		54.12*		1973	86213			
		0.06			54.2	2.000	0.064	0.622	0.900	---	33.20	34.92*		45.27*		1973	86213			
		0.06			54.2	2.000	0.064	0.623	0.960	32.70	33.90	35.66*		48.76*		1973	86213			

\*NOTE-- NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STD. DEV.

TABLE 7.13.3.1

**FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR**

**DATA ASSOCIATED WITH FIGURE 7.13.3.1 INDICATING EFFECT**

**OF ENVIRONMENT**

MATERIAL: ALUMINUM 2618  
CONDITION: T81

DELTA K  
(KSI\*IN\*\*1/2)

DA/DN (10\*\*-6 IN./CYCLE)

A

B

C

D

E= R. T.  
LAB AIR

DELTA K A: 9.66 : 7.21  
MIN B:  
C:  
D:

10.00 : 7.77  
13.00 : 15.1  
16.00 : 29.2

DELTA K A: 16.24 : 30.8  
MAX B:  
C:  
D:

ROOT MEAN SQUARE 4.38  
PERCENT ERROR

LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25 1  
SUMMARY 1.25-2.0  
(NP/NA) >2.0

CONDITION/HT: T81  
 FORM: 0.06" TH SHEET  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T  
 STRESS RATIO: +0.40  
 FREQUENCY: 2.00

YIELD STRENGTH: 57.0 KSI  
 ULT. STRENGTH:  
 SPECIMEN THK: 0.064"  
 SPECIMEN WIDTH: 4.000"  
 REFERENCES: 86734

ALUM.  
ALLOY

2618

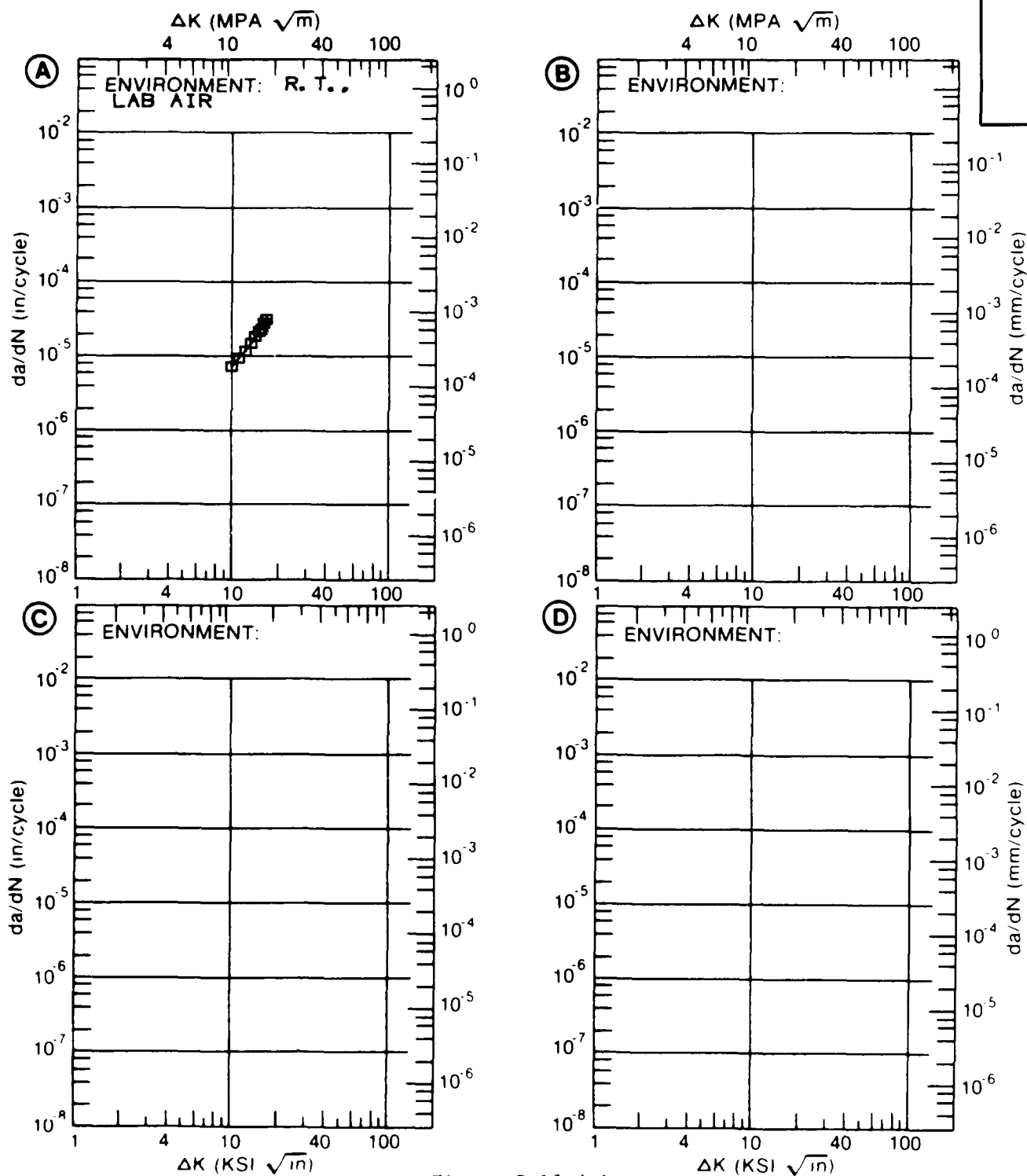


Figure 7.13.3.1

TABLE 7.13.3.2

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 7.13.3.2 INDICATING EFFECT  
OF ENVIRONMENT

MATERIAL: ALUMINUM		2618			
CONDITION: T81					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R. T.			
		LAB AIR			
DELTA K A:	:				
MIN B:	:				
C:	:				
D:	:				
200.00	:				
DELTA K A:	:				
MAX B:	:				
C:	:				
D:	:				
ROOT MEAN SQUARE		0.00			
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25				
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION/HT: T81  
 FORM: 0.06" TH SHEET  
 SPECIMEN TYPE: CCP  
 ORIENTATION: T-L  
 STRESS RATIO: +0.40  
 FREQUENCY: 2.00 HZ

YIELD STRENGTH: 57.0 KSI  
 ULT. STRENGTH:  
 SPECIMEN THK: 0.064"  
 SPECIMEN WIDTH: 4.000"  
 REFERENCES: 86734

ALUM.  
 ALLOY

2618

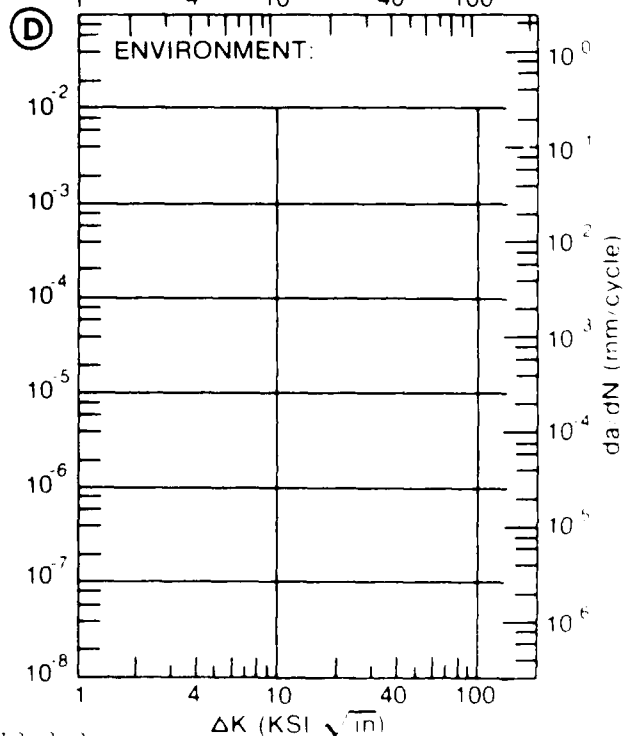
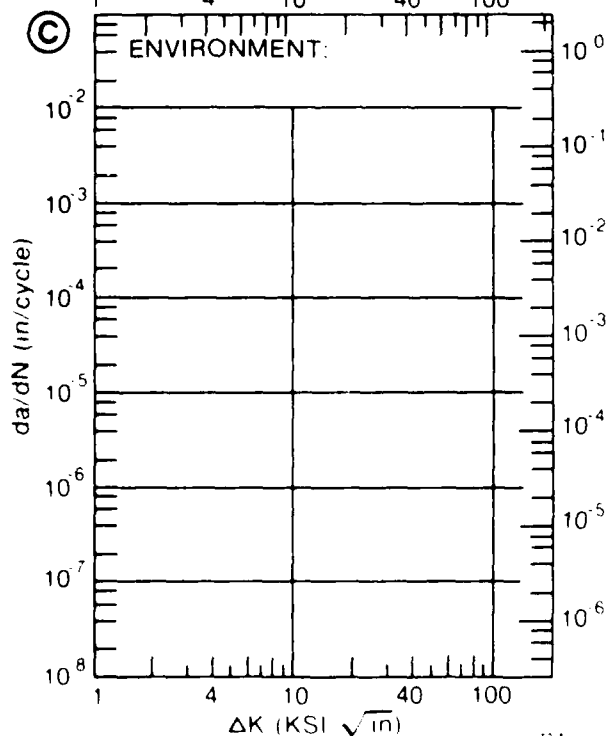
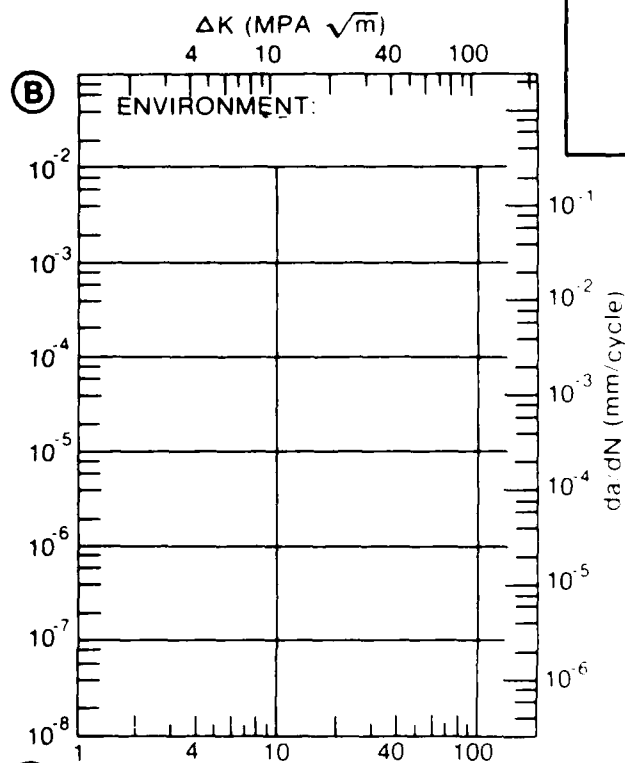
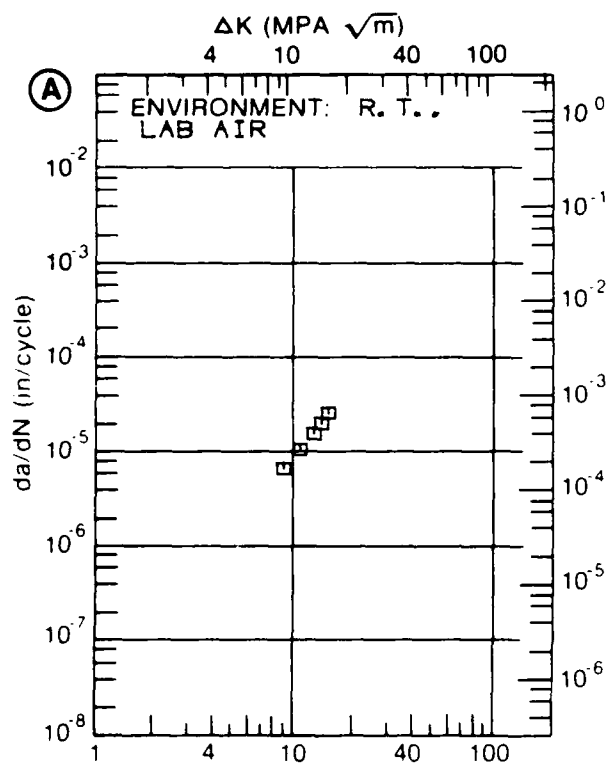


Figure 7.13.3.2

Table 7.14.1.1

MEAN PLANE STRAIN FRACTURE TOUGHNESS DATA OF  
ALUMINUM ALLOY 6061 AT ROOM TEMPERATURE

CONDITION/HT	MEAN K <sub>IC</sub> ± STANDARD (KSI SQRT(IN)) DEVIATION		(NUMBER OF SPECIMENS)	
	PLATE			
	L-T	I-T	S-L	
T651		26.6 ± 0.9 (5)	21.5 ± 0.4 (2)	

Table 7.14.2.1

CONDITION	ALUMINUM										6061		K(1C)		DATE	REFER
	--PRODUCT--		TEST SPECIMEN ORIENT	YIELD STRENGTH (KSI)	-----SPECIMEN-----		WIDTH (IN)	THICK (IN)	DESIGN	CRACK LENGTH (IN)	2.5* (K(1C)/TYS)**2 (IN)	K(1C) MEAN (KSI*SQRT IN)	STAN DEV			
	FORM	THICK (IN)			A	B										
T651	P	1.50	- 112	T-L	45.5	3.000	1.480	NB	1.500	0.96	28.20	1971	84288			
		1.50			45.5	3.000	1.480	NB	1.450	1.10	30.30	1971	84288			
		1.50			45.5	3.000	1.480	NB	1.510	1.20	31.90	30.1/	1.9	1971	84288	
T651	P	1.50	R. T.	T-L	43.4	2.000	1.000	NB	1.025	0.90	26.00	1972	82880			
		1.50			43.4	2.000	1.000	NB	1.018	0.94	26.60	1972	82880			
		1.50			43.4	3.000	1.480	NB	1.508	1.01	27.60	1971	84288			
		1.50			43.4	3.000	1.480	NB	1.443	0.86	25.40	1972	82880			
		1.50			43.4	2.000	1.000	NB	0.995	0.98	27.20	26.6/	0.9	1972	82880	
T651	P	2.50	R. T.	S-L	41.5	2.000	1.000	CT	0.951	0.68	21.70	1973	86688			
		2.50			41.5	2.000	1.000	CT	0.930	0.62	21.20	21.5/	0.4	1973	86688	
T651	P	3.00	88	S-L	39.6	2.490	1.251	CT	1.183	0.71	21.10	1973	86213			
		3.00			39.6	2.500	1.250	CT	1.181	0.74	21.60	1973	86213			
		3.00			39.6	2.500	1.250	CT	1.171	0.72	21.30	21.3/	0.3	1973	86213	
T651	FB	----	84	T-L	40.3	3.000	1.500	CT	1.547	1.29	28.90	1973	86213			
T651	FB	----	84	S-L	40.3	2.000	1.000	CT	0.987	0.91	24.30	1973	86213			
		----			40.3	2.000	1.001	CT	0.956	0.91	24.30	24.3/	0.0	1973	86213	
T652	F	9.00	R. T.	S-T	38.1	2.000	1.000	NB	1.000	0.95	23.40	1972	82675			



Table 7.14.2.2

CONDITION	ALUMINUM		6061		K(C)											
	PRODUCT-- FORM	THICK (IN)	TEST SPEC TEMP (F)	OR STR	YIELD (KSI)	W	WIDTH (IN)	THICK (IN)	CRACK LENGTH	CROSS STRESS	MAX	K (APP)	STAN DEV	K (C)	STAN DEV	REFER
						B	2A(D)	2A(F)	S(O)	S(MAX)		(KSI*SQRT IN)		(KSI*SQRT IN)		
BUCKLING OF CRACK EDGES NOT RESTRAINED																
T6	S	0.06	R T	L-T	41.9	2.000	0.062	0.622	1.240	---	28.50	29.98*		53.05*		1973 86213
		0.06			41.9	2.000	0.062	0.620	1.230	---	28.80	30.23*		53.09*		1973 86213
		0.06			41.9	2.000	0.062	0.619	1.360	---	28.40	29.75*		59.80*		1973 86213
		0.06			43.4	2.000	0.062	0.622	1.280	---	30.10	31.66*		58.31*		1973 86213
		0.06			43.4	2.000	0.062	0.622	1.300	---	30.00	31.56*		59.31*		1973 86213
		0.06			43.4	2.000	0.062	0.620	1.230	---	30.00	31.49*		55.30*		1973 86213
T6	S	0.06	R T	L-T	41.4	15.810	0.062	4.000	---	---	28.20	73.61*		---		1973 86213
		0.06			41.4	15.810	0.062	3.020	4.230	---	32.00	71.31*		86.33*		1973 86213
		0.06			41.4	15.820	0.063	1.000	1.230	---	39.10	49.13*		54.55*		1973 86213
		0.06			41.4	15.820	0.062	5.980	7.000	---	21.60	72.72*		81.73*		1973 86213
T6	S	0.12	R T	L-T	44.1	4.000	0.127	1.590	2.864	---	26.70	46.85*		86.22*		1973 86213
		0.12			44.5	4.000	0.127	1.592	3.111	---	26.90	47.24*		101.60*		1973 86213
T6	S	0.06	R T	T-L	40.7	2.000	0.063	0.619	0.980	---	28.30	29.65*		41.43*		1973 86213
		0.06			40.7	2.000	0.062	0.623	1.280	---	28.60	30.08*		55.40*		1973 86213
		0.06			40.7	2.000	0.063	0.620	1.110	---	28.20	29.60*		46.42*		1973 86213
		0.06			41.8	2.000	0.062	0.622	1.130	---	29.80	31.35*		49.97*		1973 86213
		0.06			41.8	2.000	0.062	0.617	1.320	---	29.60	30.95*		59.74*		1973 86213
		0.06			41.8	2.000	0.062	0.621	1.100	---	30.00	31.49*		48.93*		1973 86213
T6	S	0.06	R T	T-L	40.8	15.810	0.063	3.010	4.040	---	30.10	66.95*		79.03*		1973 86213
		0.06			40.8	15.810	0.062	6.010	7.000	---	20.50	69.26*		77.58*		1973 86213
		0.06			40.8	15.820	0.062	1.000	1.550	---	37.40	46.99*		58.71*		1973 86213
		0.06			40.8	15.820	0.063	4.000	---	---	27.00	70.48*		---		1973 86213
BUCKLING OF CRACK EDGES NOT RESTRAINED																
T651	P	0.25	R T	L-T	45.9	4.000	0.250	1.730	3.171	---	25.80	48.22*		101.74*		1973 86213
		0.25			45.9	4.000	0.251	1.577	2.956	---	27.60	48.12*		94.20*		1973 86213
T651	P	0.50	R T	L-T	44.1	4.000	0.503	1.600	---	13.40	28.90	50.94*		---		1973 86213

\*NOTE- NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STD. DEV

Table 7.14.2.2 (Con't)

CONDITION	ALUMINUM		6061		K(C)		CRACK LENGTH CROSS STRESS										K(C) STAN				REFER																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
	--PRODUCT--		TEST SPEC		YIELD		---SPECIMEN---		WIDTH		THICK		INIT		FINAL		ONSET		MAX			K(APP) STAN		K(C) STAN																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	FORM		THICK TEMP		OR		(IN)		(IN)		(IN)		(IN)		(KBI)		(KBI)		(KSI*SQRT IN)			(KSI*SQRT IN)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
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\*NOTE- NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STD. DEV.

TABLE 7.14.3.1

**FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR**

**DATA ASSOCIATED WITH FIGURE 7.14.3.1 INDICATING EFFECT  
OF STRESS RATIO**

MATERIAL: ALUMINUM 6061  
CONDITION: T651  
ENVIRONMENT: R.T., LAB AIR

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		R=+0.00			
DELTA K MIN	A: 11.89	12.5			
	B:				
	C:				
	D:				
	13.00	15.8			
	16.00	29.6			
	20.00	57.4			
DELTA K MAX	25.00	124.			
	30.00	259.			
	35.00	340.			
	A: 37.44	752.			
	B:				
	C:				
	D:				

ROOT MEAN SQUARE 10.47  
PERCENT ERROR

LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25  
SUMMARY 1.25-2.0  
(NP/NA) >2.0

CONDITION/HT: T651  
 FORM: 1.00" TH PLATE  
 SPECIMEN TYPE: NB  
 ORIENTATION: L-T  
 FREQUENCY: 0.10 HZ  
 ENVIRONMENT: R.T., LAB AIR

YIELD STRENGTH: 38.0 KSI  
 ULT. STRENGTH:  
 SPECIMEN THK: 0.500"  
 SPECIMEN WIDTH: 2.500"  
 REFERENCES: 81507

ALUM.  
 ALLOY

6061

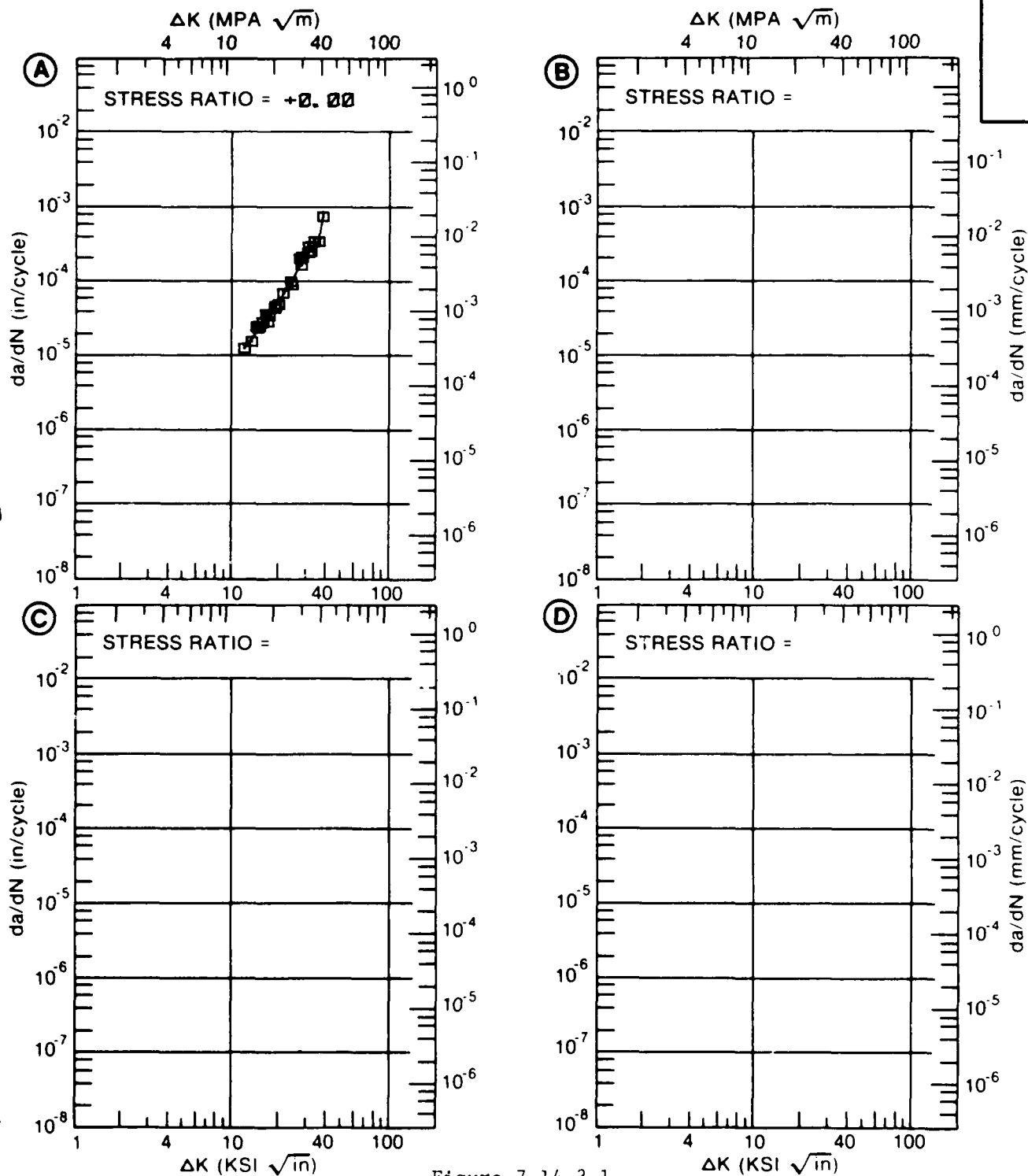


Figure 7.14.3.1

Table 7.14.3.2

CONDITION	--PRODUCT--		TEST SPEC OR TEMP (F)	YIELD STR (KSI)	ENVIRONMENT	ALUMINUM		6061		K (ISCC)		STAN DEV	TEST TIME (MIN)	DATE REFER
	FORM	THICK (IN)				WIDTH (IN)	THICK (IN)	DESIGN (**SQ)	CRACK LENGTH (IN)	MEAN K (SI*SQRT IN)				
T6	S	0.12	R.T.	S-L	----	AEROZINE 50	----	1.300	0.125	WOL	----	28.00*	----	1974 88700
T6	S	0.12	R.T.	S-L	----	AEROZINE 50/ IPCT CO2	----	1.300	0.125	WOL	----	19.60*	----	1974 88700
T6	S	0.12	R.T.	S-L	----	MATHESON COLE- MAN BELL 97PCT HYDROZINE /3 PCT H2O	----	1.300	0.125	WOL	----	16.40*	----	1974 88700
T6	S	0.12	R.T.	S-L	----	PROPELLANT GRADE HYDROZINE	----	1.300	0.125	WOL	----	25.00*	----	1974 88700
T6	S	0.12	R.T.	S-L	----	UNSYMMETRICAL DIMETHYL HYDROZINE	----	1.300	0.125	WOL	----	19.70*	----	1974 88700
T651	P	2.50	R.T.	S-L	----	41.6 INDUSTRIAL ATM	----	2.000	1.000	CT	----	21.40	20.00	1973 86688
T651	P	2.50	R.T.	S-L	----	41.6 SALT-DICHRO- MATE-ACETATE	----	2.000	1.000	CT	----	21.40	20.00	1973 86688
T651	P	2.50	R.T.	S-L	----	41.6 SEACORST ATM	----	2.000	1.000	CT	----	21.40	20.00	1973 86688
T652	F	6.00 9.00	R.T.	S-L	----	35.3 SEAWATER 38.1	----	1.400 2.000	0.700 1.000	CANT	----	29.60 27.40	26.00* 24.00	1972 82675 1972 82675

\*NOTE-DATA WHICH DO NOT MEET MINIMUM SPECIMEN THICKNESS REQUIREMENTS OF 2.5 (KISCC/TYS) SQUARED

TABLE 7.15

## REFERENCES FOR THE ALUMINUM ALLOY DATA

- 51527 2014-T6  $K_C$   
Christian, J. L., and Hurlich, A., "Physical and Mechanical Properties of Pressure Vessel Materials for Application in a Cryogenic Environment", ASD-TDR-62-258, Part II, General Dynamics/Astronautics (April 1963).
- 57210 7075-T7351  $K_C$   
Unknown
- 62306 2219-T87  $K_C$   
7075-T6  $K_C$   
Eichenberger, T. W., "Fracture Resistance Data Summary", Report DA-20947, The Boeing Company (June 1962).
- 62308 2024-T3  $K_C$   
2024(ALCLAD)-T3  $K_C$   
Anderson, W. E., "Fracture Toughness Data Summary", Report D6-9068, The Boeing Company (June 1962).
- 62309 7075-T6  $K_C$   
Batch, E. J., and Edwards, W. T., "Evaluation of Tear Resistance of 7079 Aluminum Alloys (Sheet Extrusions and Forgings)", Report SMN 86, Lockheed Aircraft Corporation, Marietta, Ga., (April 13, 1962).
- 62310 7075-T6  $K_C$   
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Anon., "Fracture Toughness Data Summary of 2000 and 7000 Series Aluminum Alloys", The Boeing Company, received from J. P. Butler (April 1965).
- 62311 2024(ALCLAD)-T3  $K_C$   
7075(ALCLAD)-T6  $K_C$   
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- 65697 7075(ALCLAD)-T6  $K_C$   
Broek, D., "The Residual Strength of Aluminum Alloy Sheet Specimens Containing Fatigue Cracks of Saw Cuts", NLR-TR M.2143, National Aerospace Laboratory, Amsterdam (March 1966).
- 66103 2219-T87  $K_C$   
Ferguson, C. W., "Hypervelocity Impact Effects on Liquid Hydrogen Tanks", NASA CR-54852, Douglas Aircraft Company Inc. (March 1966).

TABLE 7.15 (Cont)

67821	2024-T3 $K_C$	Walker, E. K., "A Study of the Influence of Geometry on the Strength of Fatigue Cracked Panels", AFFDL-TR-66-92, Northrop Norair (June 196)
68908	2014-T6 $K_C$	Orange, T. W., "Fracture Toughness of Wide 2014-T6 Aluminum Sheet at -320 F", NASA TN D-4017, Lewis Research Center (June 1967).
69759	2219-T87 $K_C$	Eitman, D. A., and Rawe, R. A., "Plane Stress Cyclic Flaw Growth of 2219-T87 Aluminum and 5Al-2.5Sn ELI Titanium Alloys at Room and Cryogenic Temperatures", NASA CR-54956, Douglas Aircraft Company, Inc. (September 1966).
70485	2024(ALCLAD)-T3 $K_C$ 7075(ALCLAD)-T6 $K_C$	Broek, D., "The Effect of Finite Specimen Width on the Residual Strength of Light Alloy Sheet", TR M.2152, National Aero- and Astronautical Research Institute, Amsterdam (September 1965).
70519	2024(ALCLAD)-T3 $K_C$	Broek, D., "The Effect of the Sheet Thickness on the Fracture Toughness of Cracked Sheet", NRL-TR M.2160, National Aerospace Laboratory, Amsterdam (January 1966).
75599	7075-T6 $K_C$	Hudson, C. M., "Effect of Stress Ratios on Fatigue-Crack Growth in 7075-T6 and 2024-T3 Aluminum-Alloy Specimens", NASA TN D-5390, Langley Research Center (August 1969).
75787	7075-T651 $K_{Isc}$	Procter, R. P. M., and Paxton, H. W., "Stress Corrosion of Aluminum Alloy 7075-T651 in Organic Liquids", Journal of Materials, <u>4</u> (3) 729-760 (September 1969).
76411	7079-T6 $K_{Ic}$	Wessel, E. T., et al., "Engineering Methods for the Design and Selection of Materials Against Fracture", Final Technical Report, Westinghouse Research Laboratories, Pittsburgh, PA, Contract DA-30-069-AMC-602 (T) (June 24, 1966).
77140	7075-T73510 $K_{Ic}$ 7178-T651 $K_{Ic}$ 7178-T6510 $K_{Ic}$	Kaufman, J. G., Schilling, P. E., and Nordmark, G. E., "Fracture Toughness, Fatigue and Corrosion Characteristics of X7080-T7E41 and 7178-T651 Plate and 7075-T6510, 7075-T73510, X7080-T7E42, and 7178-T6510 Extruded Shapes", Report AFML-TR-67-C-1521 (November 1969).

TABLE 7.15 (Cont)

77720	2014-T652	$K_{Ic}$
	2024-T852	$K_{Ic}$ , da/dN
	7075-T7352	$K_{Ic}$ , da/dN
	7079-T652	$K_{Ic}$ , da/dN
Brownhill, D. J., et al., "Mechanical Properties, Including Fracture Toughness and Fatigue, Corrosion Characteristics and Fatigue-Crack Propagation Rates of Stress-Relieved Aluminum Alloy Hand Forgings", Report AFML-TR-70-10, Aluminum Company of America, Alcoa Research Laboratory, New Kensington, PA, Contract F33615-68-C-1385 (February 1970).		
78313	2024-T351	da/dt, $K_{Isc}$
	2024-T4	da/dt
	2219-T37	da/dt
	7075-T651	da/dt
	7079-T651	da/dt, $K_{Isc}$
	7175-T66	da/dt, $K_{Isc}$
Hyatt, M. V., "Use of Precracked Specimens in Stress-Corrosion Testing of High-Strength Aluminum Alloys", Summary Report D6-24466, The Boeing Company, Renton, Wash., ARPA Contract N00014-66-C-0365 (November 1969).		
78982	2024-T3	$K_c$
Fedderson, C. E., Simonen, F. A., Hulbert, L. E., and Hyler, W. S., "An Experimental and Theoretical Investigation of Plane-Stress Fracture of 2024-T351 Aluminum Alloy", NASA CR-1678, Battelle Memorial Institute (September 1970).		
79089	7075-T7351	$K_c$
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80073	2021-T81	$K_{Ic}$ , $K_{Isc}$
	7007-T6	$K_{Isc}$
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80104	2219-T87	$K_c$
Orange, T. W., Sullivan, T. L., and Calfo, F. D., "Fracture of Thin Sections Containing Through and Part-Through Cracks", NASA TN D-6305, Lewis Research Center (April 1971).		
82675	2014-T6	$K_{Isc}$
	2024-T352	$K_{Isc}$
	2024-T852	$K_{Ic}$ , $K_{Isc}$
	6061-T652	$K_{Ic}$ , $K_{Isc}$
	7075-T7352	$K_{Ic}$ , $K_{Isc}$
Chu, H. P., and Wacker, G. A., "Fracture Toughness and Stress Corrosion Properties of Aluminum Alloy Hand Forgings", Journal of Materials, <u>7</u> (1) 95-99 (March 1972).		



TABLE 7.15 (Cont)

82878	2024-T351 $K_{Ic}$	Pearson, S., "The Effect of Mean Stress on Fatigue Crack Propagation in Half-Inch (12.7 mm) Thick Specimens of Aluminum Alloys of High and Low Fracture Toughness", Engineering Fracture Mechanics, <u>4</u> (1) 9-24 (March 1972).
82879	2014-T6 $K_{Ic}$ 7075-T6 $K_{Ic}$ 7075-T73 $K_{Ic}$ 7079-T6 $K_{Ic}$ 7080-T7 $K_{Ic}$	Moore, R. L., et al., "Fatigue and Fracture Characteristics of Aluminum Alloy Cylinders Under Internal Pressure", Engineering Fracture Mechanics, <u>4</u> (1) 51-63 (March 1972).
82880	2024-T851 $K_{Ic}$ 2219-T851 $K_{Ic}$ 6061-T651 $K_{Ic}$ 7075-T7351 $K_{Ic}$ 7079-T651 $K_{Ic}$	Nelson, F. G., et al., "The Effect of Specimen Size on the Results of Plane-Strain Fracture-Toughness Tests", Engineering Fracture Mechanics, <u>4</u> (1) 33-50 (March 1972).
83058	7175-T736 $K_{Ic}$	Jones, R. E., "Fracture Toughness and Fatigue Crack Growth Properties of 7175-T736 Aluminum Alloy Forging at Several Temperatures", Report AFML-TR-72-1, University of Dayton Research Institute, Dayton, OH, Contract F33615-71-C-1054 (February 1972).
83061	7049-T73 $K_{Ic}$ , $K_{Isc}$ 7049-T76 $K_{Ic}$	Jones, R. E., "Mechanical Properties of 7049-T73 and 7049-T76 Aluminum Alloy Extrusions at Several Temperatures", Report AFML-TR-72-2, University of Dayton Research Institute, Dayton, OH, Contract F33615-71-C-1054 (February 1972).
83242	7049-T73 $K_{Ic}$ , $K_{Isc}$ 7175-T736 $K_{Ic}$ , $K_{Isc}$	Harmsworth, C. L., "Evaluation of Landing Gears Fabricated from 7175-T736 and 7049-T73 Aluminum Alloys", Report No. LA 72-22, Air Force Materials Laboratory, Wright-Patterson AFB, OH, (May 25, 1972).
83243	2024-T851 $K_{Ic}$	Gunderson, A. W., "Tensile, Fracture and Fatigue Properties of 2024-T851 Aluminum Thick Plate", Report No. LA 72-24, Air Force Materials Laboratory, Wright-Patterson AFB, OH, (May 26, 1972).
84284	2024-T351 $da/dt$ 7039-T64 $da/dt$ 7049-T73 $da/dt$ 7075-T651 $da/dt$ 7075-T7351 $da/dt$ 7079-T651 $da/dt$ 7175-T736 $da/dt$	Hyatt, M. V., "Use of Precracked Specimens in Stress Corrosion Testing of High Strength Aluminum Alloys", Corrosion, <u>26</u> (11), 487-503 (November 1970).

TABLE 7.15 (Cont)

84286	7075 da/dt 7075-T7351 da/dt	Hyatt, M. V., "Use of Precracked Specimens in Selecting Heat Treatments for Stress-Corrosion Resistance in High Strength Aluminum Alloys", Corrosion, <u>27</u> (1), 49-53 (January 1971).
84288	2014-T651 K <sub>Ic</sub> 2024-T851 K <sub>Ic</sub> 6061-T651 K <sub>Ic</sub> 7075-T651 K <sub>Ic</sub> 7079-T651 K <sub>Ic</sub>	Nelson, F. G., and Kaufman, J. G., "Plane Strain Fracture Toughness of Aluminum Alloys at Room and Subzero Temperatures", ASTM STP 496, American Society for Testing and Materials, Philadelphia, PA, (1971).
84306	2024-T851 K <sub>Ic</sub> 2124-T851 K <sub>Ic</sub> 2219-T851 K <sub>Ic</sub> 7049-T73 K <sub>Ic</sub> 7075-T651 K <sub>Ic</sub> 7075-T7351 K <sub>Ic</sub> 7075-T7651 K <sub>Ic</sub>	Harrigan, M. J., "B-1 Fracture Mechanics Data for Air Force Handbook Usage", Report TFD-72-501, North American Rockwell, Los Angeles Division, Los Angeles, CA, (April 21, 1972).
84319	2219-T87 K <sub>Ic</sub>	Engstrom, W. L., "Determination of Design Allowable Properties, Fracture of 2219-T87 Aluminum Alloy", NASA CR-115388, The Boeing Company, Aerospace Group, Seattle, Wash., Contract NAS 9-10364 (March 1972).
84329	7079-T6 K <sub>Isc</sub>	Report of NRL Progress, Naval Research Laboratory, Washington, D.C. (October 1967).
84331	2020-T651 K <sub>Isc</sub> 2219-T851 K <sub>Isc</sub> 7005-T63 K <sub>Isc</sub> 7075-T6 K <sub>Isc</sub> 7075-T651 K <sub>Isc</sub> 7075-T7351 K <sub>Isc</sub> 7079-T6 K <sub>Isc</sub>	Report of NRL Progress, Naval Research Laboratory, Washington, D.C. (January 1968).
84340	7075-T651 K <sub>c</sub> 7075-T7351 K <sub>c</sub>	Allen, F. C., "Effect of Thickness on the Fracture Toughness of 7075 Aluminum in the T6 and T73 Conditions", ASTM STP 486, "Damage Tolerance in Aircraft Structures", p 16-38 (1971).
84360	2024-T851 da/dN, K <sub>Isc</sub> 7075-T651 K <sub>Ic</sub> , da/dN, K <sub>Isc</sub> 7175-T736 da/dN, K <sub>Isc</sub>	McDonnell Aircraft Company, McDonnell Douglas Corporation, St. Louis, MO, Phase B Test Program, Report MDC A0913 (May 18, 1971).

TABLE 7.15 (Cont)

84362	7050-T73651 $K_{Isc}$ 7075-T7351 $K_{Isc}$	Dill, H. D., and Rich, D. L., "Evaluation of Aluminum Plate Alloys 7075-T7351, X7050-T73651 and 2021-T81", Report No. MDC A1755, McDonnell Aircraft Company, McDonnell Douglas Corporation, St. Louis, MO, (May 30, 1972).
84363	2021-T81 $K_{Ic}$ 7050-T73651 $K_{Ic}$ 7075-T7351 $K_{Ic}$ , da/dN	Rich, D. L., "MCAIR IRAD Data for Fracture Mechanics Engineering and Design Data Handbook", with enclosures (1) Materials Definition, (2) Mechanical Properties Test Data, (3) Plane Strain Fracture Toughness Test Data, and (4) Plane Strain Constant Amplitude Crack Growth Test Data, McDonnell Aircraft Company, McDonnell Douglas Corporation, St. Louis, MO (June 14, 1972).
84366	2024(ALCLAD)-T3 $K_c$	Broek, D., "Static Tests on Cracked Panels of 2024-T3 Alclad Sheet Materials From Different Manufacturers", NLR-TN M.2164, National Aerospace Laboratory, The Netherlands (November 1966).
84367	2024-T3 $K_c$ 7075-T6 $K_c$	McEvily, A. J., Illg, W., and Hardrath, H. F., "Static Strength of Aluminum-Alloy Specimens Containing Fatigue Cracks", NACA TN 3816, Langley Aeronautical Laboratories (October 1956).
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85291	7050-T7E56 $K_{Ic}$	Deel, O. L., and Mindlin, H., "Engineering Data on New Aerospace Structural Materials", Report AFML-TR-72-196, Volume 1, Battelle, Columbus Laboratories, Columbus, OH, Contract F33615-71-C-1262 (September 1972).
85363	7475-T61 da/dN 7475-T6151 da/dN 7475-T7351 da/dN 7475-T761 da/dN	Cervay, R. R., "Engineering Design Data for Aluminum Alloy 7475 in the T761 and T61 Condition", Report AFML-TR-72-173, University of Dayton Research Institute, Dayton, OH, Contract F33615-71-C-1054, (September 1972).

TABLE 7.15 (Cont)

85543	7075-T651	da/dt	
	7079-T651	da/dt	
	7079-T651(+50 HR at 320F)	da/dt	
	7178-T651	da/dt	
	7178-T7651	da/dt	
	Speidel, M. O., "Current Understanding of Stress Corrosion Crack Growth in Aluminum Alloys", from The Theory of Stress Corrosion Cracking in Alloys, the Proceedings of a Research Evaluation Conference, J. C. Scully (Editor), Published by NATO Scientific Affairs Division, Brussels, Belgium (1971).		
85631	2219-T87	$K_{Ic}$	
	2219-T87 (-300F 100HR)	$K_{Ic}$	
	Thatcher, C. S., "Fracture of Aluminum Alloy 2219-T87", Report SD 72-SH-0129, Space Division, North American Rockwell, Los Angeles, CA, (November 1972).		
85836	2024-T851	$K_{Ic}$	7075-T73651 $K_{Ic}$
	2024-T852	$K_{Ic}$	7075-T73511 $K_{Ic}$
	2219-T851	$K_{Ic}$	7075-T73652 $K_{Ic}$
	2219-T852	$K_{Ic}$	7075-T7651 $K_{Ic}$
	7049-T7352	$K_{Ic}$	
	"B-1 Fracture Toughness Data ( $K$ (sub $I_c$ )) - Rockwell International", Rockwell International Corporation, Los Angeles, CA, (April 24, 1973).		
85837	2024-T851	da/dN	7050-T7351 da/dN
	2024-T852	da/dN	7050-T7351 da/dN
	2219-T851	da/dN	7075-T7651 da/dN
	2219-T8511	da/dN	7175-T73652 da/dN
	2219-T852	da/dN	
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85880	7050-T736	$K_{Ic}$	
	7175-T736	$K_{Ic}$ , da/dN	
	Garland, K., "Evaluation of X7050-T736 Die Forgings", Report 514-131.10, McDonnell Aircraft Company, McDonnell Douglas Corporation, St. Louis, MO, (February 20, 1973).		
86088	7075-T6	da/dN	
	7178-T6	da/dN	
	Hudson, C. M., and Newman, J. C., Jr., "Effect of Specimen Thickness on Fatigue-Crack-Growth Behavior and Fracture Toughness of 7075-T6, and 7178-T6 Aluminum Alloys", Report NASA TN D-7173, Langley Research Center, Hampton, VA (April 1973).		
86210	2024-T852	$K_{Ic}$	
	7075-T73511	$K_{Ic}$	
	7075-T7651	$K_{Ic}$	
	7075-T76511	$K_{Ic}$	
	"Rockwell International, B-1 Fracture Toughness Data on Titanium and Aluminum Alloys of June 4, 1973", Rockwell International, Los Angeles, CA, (June 4, 1973).		

TABLE 7.15 (Cont)

86212 2024-T3 da/dN  
 7050-T736  $K_{Ic}$ ,  $K_{Isc}$   
 7075-T76511  $K_{Ic}$ ,  $K_{Isc}$   
 7475-T61 da/dN  
 7475-T761 da/dN, da/dt  
 7475(ALCLAD)-T61 da/dN  
 7475(ALCLAD)-T761 da/dN

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86213	2014-T6	$K_{Ic}$ , $K_c$ , da/dN	7075-T6510	$K_{Ic}$
	2014-T61	$K_{Ic}$	7075-T6511	$K_{Ic}$
	2014-T611	$K_{Ic}$	7075-T73	$K_{Ic}$ , $K_c$
	2014-T651	$K_{Ic}$ , $K_c$	7075-T7351	$K_{Ic}$ , $K_c$
	2020-T6	$K_{Ic}$ , $K_c$	7075-T73510	$K_{Ic}$
	2020-T651	$K_{Ic}$ , $K_c$ , da/dN	7075-T73511	$K_{Ic}$
	2020(ALCLAD)-T6	$K_c$	7075-T7352	$K_{Ic}$
	2021-T8151	$K_{Ic}$	7075-T76	$K_{Ic}$ , $K_c$
	2024-T3	$K_c$ , da/dN	7075-T7651	$K_{Ic}$ , $K_c$
	2024-T351	$K_{Ic}$ , $K_c$	7075-T7651 (SP)	$K_{Ic}$
	2024-T36	$K_c$	7075-T76511	$K_{Ic}$
	2024-T6	$K_c$	7075(ALCLAD)-T6	da/dN
	2024-T81	$K_c$	7075(ALCLAD)-T7651	$K_{Ic}$
	2024-T851	$K_{Ic}$ , $K_c$	7079-T6	$K_{Ic}$ , $K_c$
	2024-T852	$K_{Ic}$	7079-T651	$K_{Ic}$ , $K_c$
	2024-T86	$K_c$	7079-T652	$K_{Ic}$
	2024(ALCLAD)-T3	$K_c$ , da/dN	7079(ALCLAD)-T6	$K_c$
	2024(ALCLAD)-T86	$K_c$	7080-T7	$K_{Ic}$
	2124-T351(417)	$K_{Ic}$	7175-T66	$K_{Ic}$
	2124-T851	$K_c$	7175-T73	$K_{Ic}$
	2124-T851 (SP)	$K_{Ic}$	7175-T7352	$K_{Ic}$
	2124-T851 (417)	$K_{Ic}$	7175-T736	$K_{Ic}$
	2214-T651	$K_{Ic}$	7175-T73652	$K_{Ic}$
	2214-T651 (417)	$K_{Ic}$	7178-T6	$K_c$
	2219-T81	$K_c$	7178-T651	$K_{Ic}$ , $K_c$
	2219-T851	$K_{Ic}$ , $K_c$	7178-T7651	$K_{Ic}$ , $K_c$ , da,
	2219-T852	$K_{Ic}$	7178-T76510	$K_{Ic}$ , da/dN
	2219-T87	$K_{Ic}$ , $K_c$	7178-T76511	$K_{Ic}$
	2618-T61	$K_c$	7178(ALCLAD)-T6	$K_c$
	2618-T651	$K_{Ic}$	7178(ALCLAD)-T76	$K_c$
	6061-T6	$K_c$	7475-T6	$K_{Ic}$
	6061-T651	$K_{Ic}$ , $K_c$	7475-T61	$K_c$
	7001-T75	$K_{Ic}$ , $K_c$	7475-T651	$K_{Ic}$ , da/dN
	7005-T6	$K_c$	7475-T651 (SP)	$K_{Ic}$
	7005-T6351	$K_{Ic}$ , $K_c$	7475-T73	$K_{Ic}$
	7049-T73	$K_{Ic}$	7475-T7351	$K_{Ic}$
	7049-T7351	$K_{Ic}$	7475-T7351 (SP)	$K_{Ic}$
	7049-T7352	$K_{Ic}$	7475-T736	$K_{Ic}$
	7050-T6	da/dN	7475-T76	da/dN
	7050-T7352	$K_{Ic}$	7475-T761	$K_c$
	7050-T736	$K_{Ic}$	7475-T7651	$K_{Ic}$
	7050-T73651	$K_{Ic}$	7475-T7651 (SP)	$K_{Ic}$
	7050-T73652	$K_{Ic}$	7475(ALCLAD)-T73	$K_c$
	7050-T76	da/dN	7475(ALCLAD)-T731	$K_c$
	7050-T76511	$K_{Ic}$	7475(ALCLAD)-T761	$K_c$ , da/dN
	7075-T6	$K_c$ , da/dN	7475(ALCLAD)-T761	$K_c$ , da/dN
	7075-T651	$K_{Ic}$ , $K_c$		

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TABLE 7.15 (Cont)

86429	2024-T851 K <sub>Ic</sub> 7050-T73651 K <sub>Ic</sub>	<p>"Fracture Toughness Data", Progress Report on Materials Test Program, General Dynamics Corporation, Fort Worth Division, Fort Worth, TX, Contract F33615-72-C-2149 (Received July 6, 1973).</p>		
86493	7050-T73651	<p>Deel, O. L., Ruff, P. E., and Mindlin, H., "Engineering Data on New Aerospace Structural Materials", Report AFML-TR-73-114, Battelle-Columbus Laboratories, Columbus, OH, Contract F33615-72-C-1280 (June 1973).</p>		
86574	7050-T73651 K <sub>Ic</sub> 7050-T7651 K <sub>Ic</sub> 7475-T7651 K <sub>Ic</sub>	<p>Figge, F. A., and Wells, R. R., "Advanced Metallic Structure: Air Superiority Fighter-Wing Design for Improved Cost, Weight and Integrity Report No. AFFDL-TR-73-52, Volume III, Northrop Corporation, Aircraft Division, Hawthorne, CA, Contract F33615-72-C-1891 (June 1973), with original data for da/dN tests.</p>		
86575	2024-T81 da/dN 7075-T76 da/dN	<p>"Rockwell International, B-1 Program, da/dN Data, Center-Cracked Tension Specimens", Lockheed California Company, Burbank, CA, Report LR25152 (Received July 1973) (Memo from E. W. Cawthorne dated July 10, 1973).</p>		
86688	2014-T651 K <sub>Isc</sub> 2021-T81 K <sub>Isc</sub> 2024-T351 K <sub>Isc</sub> 2024-T851 K <sub>Isc</sub> 2219-T37 K <sub>Isc</sub>	2219-T87 K <sub>Ic</sub> , K <sub>Isc</sub> 6061-T651 K <sub>Ic</sub> , K <sub>Isc</sub> 7075-T651 K <sub>Isc</sub> 7075-T7351 K <sub>Isc</sub> 7079-T651 K <sub>Isc</sub>	<p>Sprowls, D. O., et al., "Evaluation of Stress-Corrosion Cracking Susceptibility Using Fracture Mechanics Techniques", Final Report, Part I, Aluminum Company of America, Alcoa Technical Center, Alcoa Center, PA, Contract NAS8-21487 (May 31, 1973).</p>	
86734	2014-T6 da/dN 2024-T3 K <sub>c</sub> 2024-T351 K <sub>c</sub> 2024-T4 K <sub>c</sub> 2024-T81 K <sub>c</sub> , da/dN 2024(ALCLAD)-T3 K <sub>c</sub>	2618-T81 da/dN 7075-T6 K <sub>c</sub> 7075(ALCLAD)-T6 K <sub>c</sub> 7079-T6 da/dN 7079-T651 da/dN	<p>Smith, S. H., "Fracture Mechanics Application to Materials Evaluation and Selection for Aircraft Structure and Fracture Analysis", Report No. D6-17756, The Boeing Company, Commercial Airplane Division, Renton, Washington (July 19, 1966).</p>	

TABLE 7.15 (Cont)

86842	2124-T851 da/dN 7049-T73 da/dN 7175-T736 da/dN 7475-T61 $K_{IC}$ , da/dN 7475-T761 $K_{IC}$ , da/dN 7475(ALCLAD)-T61 $K_{IC}$
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86844	7050-T7351 da/dN 7050-T73651 da/dN 7050-T7651 da/dN
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87398	2024-T3 da/dN
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88140	7075-T651 $K_{IC}$ , da/dN 7475-T651 da/dN
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88174	7050-T73651 $K_{IC}$ , da/dN
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88186	7050-T7351 $K_{IC}$
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88468	2219-T851 da/dN
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88578	2024-T861	da/dN		
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88579	2024-T851	da/dN	7075-T73511	da/dN
	2024-T852	da/dN	7075-T7352	da/dN
	2219-T851	da/dN	7075-T7651	da/dN
	7050-T73	da/dN	7075-T76511	da/dN
	7050-T73651	da/dN	7175-T73652	da/dN
	7075-T7351	da/dN		
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88700	6061-T6	K <sub>Isc</sub>		
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88742	2124-T851	K <sub>Ic</sub>		
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90011	2024-T351	K <sub>Ic</sub>		
	2024-T851	K <sub>Ic</sub>		
	2024-T852	K <sub>Ic</sub>		
	2219-T851	K <sub>Ic</sub>		
	7075-T7651	K <sub>Ic</sub>		
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90981	2024-T851	K <sub>Ic</sub> , da/dN		
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91123	7050-T736	K <sub>Ic</sub>		
	7075-T76511	K <sub>Ic</sub>		
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91332	7050-T736	da/dN		
	7050-T73651	da/dN		
	7050-T7651	da/dN		
	7475-T651	da/dN		
	7475-T7651	da/dN		
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AL001 2048-T851  $K_{Ic}$ , da/dN  
 2219-T852  $K_{Ic}$ , da/dN  
 7050-T7351  $K_{Ic}$ , da/dN  
 7475-T7351 da/dN

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AL002 2020-T651 da/dN  
 7075-T6510 da/dN  
 7075-T73510 da/dN  
 7475-T651 da/dN

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AL003 7475-T651 da/dN

FCGR Data Sheets for Aluminum Alloy 7475-T651 Plate, Received from R. J. Bucci, Aluminum Company of America, Alcoa Laboratories, August 1982.

AL004 7050-T76511 da/dN

FCGR Data Sheets on Aluminum Alloy 7050-T76511 and T73511, Received from R. J. Bucci, Aluminum Company of America, Alcoa Laboratories, August 1982.

AL005 7075-T651 da/dN  
 7075-T6510 da/dN  
 7075-T7351 da/dN  
 7075-T73510 da/dN

FCGR Data Sheets on Aluminum Alloy 7075- Conditions T651, T6510, T7351, T73510, Plates, Bars, and Extrusions; Received from R. J. Bucci, Aluminum Company of America, Alcoa Laboratories, August 1982.

AL006 7050-T73511 da/dN

FCGR Data Sheets on Aluminum Alloy 7050-T73511 Extrusions, Received from R. J. Bucci, Aluminum Company of America, Alcoa Laboratories, August 1982.

AL007 7050-T7351X da/dN

FCGR Data Sheets on Aluminum Alloy 7050-T7351X Extrusions, Received from R. J. Bucci, Aluminum Company of America, Alcoa Laboratories, August 1982.

AL008 7050-T7651X da/dN

FCGR Data Sheets on Aluminum Alloy 7050-T7651X Extrusions, Received from R. J. Bucci, Aluminum Company of America, Alcoa Laboratories, August 1982.

TABLE 7.15 (Cont)

AL009	7475-T7351 da/dN	FCGR Data Sheets on Aluminum Alloy 7475-T7351 Plate, Received from R. J. Bucci, Aluminum Company of America, Alcoa Laboratories, August 1982.
AL010	2024-T351 da/dN	FCGR Data Sheets on Aluminum Alloy 2024-T351 Plate, Received from R. J. Bucci, Aluminum Company of America, Alcoa Laboratories, August 1982.
AL011	2324-T39 da/dN	FCGR Data Sheets on Aluminum Alloy 2324-T39 Plate, Received From R. J. Bucci, Aluminum Company of America, Alcoa Laboratories, August 1982.
AL012	7050(ALCLAD)-T76 da/dN	FCGR Data Sheets on Aluminum Alloy 7050-T76 (ALCLAD), Received from R. J. Bucci, Aluminum Company of America, Alcoa Laboratories, August 1982.
AL013	7050-T73651 da/dN	FCGR Data Sheets on Aluminum Alloy 7050-T73651 Plate, Received from R. J. Bucci, Aluminum Company of America, Alcoa Laboratories, August 1982.
AL014	7150-T651 da/dN	FCGR Data Sheets on Aluminum Alloy 7150-T651 Plate, Received from R. J. Bucci, Aluminum Company of America, Alcoa Laboratories, August 1982.
AL015	7050-T73651 $K_{Ic}$ 7050-T73652 $K_{Ic}$ , da/dN 7050-T76 da/dN	FCGR Data Sheets on Aluminum Alloy 7050-T73651 Plate and 7050-T73652 Forging, Received from R. J. Bucci, Aluminum Company of America, Alcoa Laboratories, August 1982.
BL001	7010-T73651 $K_{Ic}$ , $K_{Isc}$	Deel, O., "Engineering Data for New Aerospace Materials", Battelle's Columbus Laboratories, Columbus, OH, Contract No. F33615-78-C-5040, Report No. AFWAL-TR-80-4103, July 1980.
BL002	2124-T851 da/dN 7075-T7351 da/dN 7475-T7351 da/dN	Ruff, P. E., and Smith, S. H., "Development of Mil-Hdbk-5 Design Allowable Properties and Fatigue Crack-Propagation Data for Several Aerospace Materials", Battelle's Columbus Laboratories, Columbus, OH, Contract No. F33615-75-C-5063, Report No. AFML-TR-77-162, October 1977.

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 2024-T3511 da/dN  
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 7075-T6511 da/dN  
 7079-T6 da/dN  
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BW005 2024-T3511 da/dN

Watson, K. R., "Weapons Bay Durability and Damage Tolerance Analysis", The Boeing Company, Wichita, KS, Contract No. F33657-78-C-0108-PZ0036, Document No. D361-40041-1, September 1980.

BW007 2024-T3511  $K_{Ic}$

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DA001 2024-T351 R-curve, da/dN  
 7075-T6511 R-curve, da/dN  
 7475-T7651 R-curve, da/dN

Fatigue Crack Growth Rate Data Sheets on Aluminum Alloys 2024, 7010, 7050, 7075 and 7475, Stainless Steel Alloys 17-4PH and 17-7PH, and Alloy Steels 4340, A286, H-11, H7-180 and 12-9-2, Sent from Paul Abelkis, Douglas Aircraft Company, McDonnell Douglas Corporation, Long Beach, CA, March 1982.

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GD003	2124-T851 $K_{Ic}$ , da/dN	Kaariela, W. T., "2124-T851 Metals Allowables Testing", General Dynamics, Fort Worth Division, Report 16 PR850, October 1978.
GD004	2024-T62 da/dN 2024-T81 da/dN	Wolnaski, Z. R., "2024-T81 and -T62 0.125-Inch Sheet Metal Allowables", General Dynamics, Fort Worth Division, Report No. 16 PR853, October 1978.
GD005	2024-T62 $K_C$ , R-curve 2024-T81 $K_C$ , R-curve 7475-T7351 $K_C$ , R-curve 7475-T7651 $K_C$ , R-curve	Margolis, W. S., and Nordquist, F. C., "Plane Stress Fracture Toughness ( $K_C$ ) of Aluminum Alloy 7475- One Half Inch Plate Tempers -T7651 and -T7351 and of Aluminum Alloy 2024 - One Eighth Inch Sheet -T81 and -T62 Temper", General Dynamics, Fort Worth Division, TX, Report No. 16 PR889, February 1978.
GD006	7475-T7351 $K_{Ic}$ , da/dN, $K_{Isc}$ 7475-T7651 da/dN, $K_{Isc}$	Margolis, W. S., "F-16 Material Test Allowables for Aluminum Alloy 7475, 3.0" Plate -T7351 Temper and 0.5" Plate (92" Width) -T7651 Temper and -T7351 Temper", General Dynamics, Fort Worth Division, Report No. 16 PR926, April 1978.
GD008	7075-T73 da/dN	Margolis, W. S., "F-16 Material Test Allowables of Aluminum Alloy Forgings 7075-T73 and 7049-T73", General Dynamics, Fort Worth Division, Report No. 16 PR956, July 1978.
GD011	2124-T851 $K_{Ic}$ , $K_C$ , R-curve 7475-T7351 $K_C$ , R-curve	Margolis, W. S., "Plane Stress ( $K_C$ ) Fracture Toughness of Thin Elements from Thick Plate of 2124-T851 and 7475-T7351 Aluminum Alloys", General Dynamics, Fort Worth Division, Report No. 16 PR1287, October 1979.
LG001	7175-T73511 $K_{Ic}$ , $K_C$ , $K_{Isc}$	Carter, F. J. et al., "C-5A Wing Modification Program - Material Characterization Program - 7175-T73511 Extrusions Final Report", Lockheed-Georgia Company, Marietta, GA, Contract No. F33657-75-C-0178, Report No. LG75ER 0186-2, September 1977.
LG002	7050(ALCLAD)-T76 $K_C$ 7475(ALCLAD)-T61 $K_C$	Fuselage Materials Tests - $K_C$ Data on Aluminum 7050-T76 and 7475-T61 Materials - sent from E. J. Batch, Lockheed Georgia Company, Marietta, GA, October 1982.

TABLE 7.15 (Cont)

LG003	7175-T73511	$K_{Ic}$
	7175-T76511	$K_{Ic}$
Wygonik, R. H., "Evaluation of the R-curve for Fracture Toughness Quality Assurance Testing of Thin 7175 Aluminum Extrusions", Alcoa Laboratories, Alcoa Center, PA, for Lockheed-Georgia, Contract PO-RW18554, December 1981.		
MA002	2124-T851	$K_{Ic}$ , da/dN
	7175-T73652	$K_{Ic}$ , da/dN
Fracture Toughness of Ti-6Al-4V Plate and Forging, Aluminum 2124-T851 Plate and 7175-T73652 Forging and Fatigue Crack Growth Rate for Ti-6Al-4V Plate and Forging, Ti-6Al-6V-2Sn Extrusion, Aluminum 2124-T851 Plate and Aluminum 7175-T73652 Forging, Data submitted by D. L. Rich of McDonnell Aircraft Company, St. Louis, MO, Attachment #2, Received March 12, 1982.		
MA005	7050-T7651	da/dN, $K_{Isc}$
	7075-T7351	$K_{Ic}$ , da/dN, $K_{Isc}$
	7175-T73652	$K_{Ic}$ , da/dN, $K_{Isc}$
	7475-T7351	$K_{Ic}$ , $K_{Isc}$
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MA006	7075-T7351	da/dN
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MA007	7049-T7351	da/dN
	7075-T6	da/dN
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MA008	7075-T6	da/dN
	7075-T651	da/dN
Garland, K., and Krieg, J. F., "Evaluation of Stress Level Effects Under Plane Stress and Plane Strain Conditions", McDonnell Aircraft Company, St. Louis, MO, Report No. TR 301-346, TM 256-5597, July 1979.		
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	7075-T7352	$K_{Ic}$ , da/dN
	7079-T6	da/dN
	7178-T651	da/dN
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TABLE 7.15 (Cont)

MA012 7075-T651  $K_{Ic}$ , da/dN  
 7075-T7352  $K_{Ic}$ , da/dN  
 7178-T76 da/dN

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MD001 2219-T851  $K_{Ic}$   
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MPC01	2024-T851 $K_{Ic}$	7075-T7651 $K_{Ic}$
	2024-T8510 $K_{Ic}$	7075(ALCLAD)-T7651 $K_{Ic}$
	2124-T851 $K_{Ic}$	7079-T651 $K_{Ic}$
	2219-T851 $K_{Ic}$	7079-T851 $K_{Ic}$
	2419-T851 $K_{Ic}$	7175-T7651 $K_{Ic}$
	7075-T651 $K_{Ic}$	7178-T7651 $K_{Ic}$
	7075-T6510 $K_{Ic}$	7475-T651 $K_{Ic}$
	7075-T6511 $K_{Ic}$	7475-T7351 $K_{Ic}$
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MR001 7075-T651 da/dN  
 7075-T7351  $K_{Ic}$ , da/dN  
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 7050-T73651  $K_{Ic}$   
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NC002 7050-T736 da/dN  
 7050-T73651 da/dN  
 7075-T7351 da/dN  
 7149-T73511 da/dN

Fatigue Crack Growth Rate Data on Aluminum, Steel and Titanium Alloys, Data Sent From P. G. Porter of Northrop Corporation, March 1, 1982.

NC003 2024-T851  $K_{Ic}$ , da/dN  
 2124-T851  $K_{Ic}$ , da/dN  
 7050-T73651  $K_{Ic}$   
 7075-T7351  $K_{Ic}$ , da/dN

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TABLE 7.15 (Cont)

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RA002	2124-T851 $K_{Ic}$	Summary of Plane-Strain Fracture Toughness and Notch-Tensile Tests-Reynolds Metals Company, Metallurgical Research Division, Richmond, VA, Project 38-KFP, November 1978.
RA003	7475-T7351 $K_{Ic}$	Summary of Plane-Strain Fracture Toughness and Notch-Tensile Tests-Reynolds Metals Company, Metallurgical Research Division, Richmond, VA, Project 38KFN-7475 Alloy, March 1978 - November 1978.
RA004	7475-T7351 $K_{Ic}$	Summary of Plane-Strain Fracture Toughness and Notch-Tensile Tests-Reynolds Metals Company, Metallurgical Research Division, Richmond, VA, Project 37-KFN-7475 Alloy, August 1977 - December 1977.
RA005	7475-T7351 $K_{Ic}$	Summary of Plane-Strain Fracture Toughness and Notch-Tensile Tests-Reynolds Metals Company, Metallurgical Research Division, Richmond, VA, Project 38-KFN-3M04-7475 Alloy, May 1980.
RA006	7475-T7351 $K_{Ic}$	Summary of Plane-Strain Fracture Toughness and Notch-Tensile Tests-Reynolds Metals Company, Metallurgical Research Division, Richmond, VA, Project 38-KFP-7475 Alloy, September 1977 - November 1977.
RA007	7475-T7651 $K_{Ic}$	Summary of Plane-Strain Fracture Toughness and Notch-Tensile Tests-Reynolds Metals Company, Metallurgical Research Division, Richmond, VA, Project 37-KFP-7475 Alloy, 1977.
RA008	7050-T73651 $K_{Ic}$	Summary of Plane-Strain Fracture Toughness and Notch-Tensile Tests-Reynolds Metals Company, Metallurgical Research Division, Richmond, VA, Project 37-KFP-7050 Alloy-T73651, January 1978.
RA009	7050-T73651 $K_{Ic}$	Summary of Plane-Strain Fracture Toughness and Notch-Tensile Tests-Reynolds Metals Company, Metallurgical Research Division, Richmond, VA, Project 37-KFN-7050 Alloy-T73651, 1977.
RA010	7050-T73651 $K_{Ic}$	Summary of Plane-Strain Fracture Toughness and Notch-Tensile Tests-Reynolds Metals Company, Metallurgical Research Division, Richmond, VA, Project 38-KFP-7050 Alloy-T73651, 1977.

TABLE 7.15 (Cont)

RI002	7178-T651 da/dN		
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RI003	2219-T851 da/dN		
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RI006	2024-T852 K <sub>Isc</sub>	7075-T73 K <sub>Isc</sub>	
	2124-T851 K <sub>Isc</sub>	7075-T7351 K <sub>Isc</sub>	
	2219-T851 K <sub>Isc</sub>	7075-T73511 K <sub>Isc</sub>	
	7049-T7352 K <sub>Isc</sub>	7075-T7651 K <sub>Isc</sub>	
	7050-T73651 K <sub>Isc</sub>	7175-T73652 K <sub>Isc</sub>	
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TABLE 7.15 (Cont)

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WA001	7049-T73511 $K_{Ic}$
	7050-T73511 $K_{Ic}$ , da/dN
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## **CHAPTER 8**

### **7000 SERIES ALUMINUM ALLOY SECTIONS**

8.0	7000 Series Aluminum Material Summaries
8.1	7001
8.2	7005
8.3	7007
8.4	7010
8.5	7039
8.6	7049
8.7	7050
8.8	7050 (Alclad)

TABLE 8.0.1

AVAILABLE DATA FOR ALUMINUM ALLOYS

ALLOY	SUNDTION/HT	PRODUCT FORM	WIC	KC	R	CURVES	CA/DN	DA/DT	WISCC
7001	175	PLATE SHEET	X	X	X	X			
7005	16	SHEET PLATE		X	X	X			
	163	PLATE							
	76351	PLATE	X	X					X
7007	T6 OVERHEATED WELD CENTER LINE	PLATE							X
	T6 REPAIRED WELD FUSION LINE	PLATE							X
	T6 REPAIRED WELD HEAT AFFECT ZONE	PLATE							X
	T6 REPAIRED WELD CENTER LINE	PLATE							X
	T6 WELD CENTERLINE	PLATE							X
	T6 WELD FUSION LINE	PLATE							X
	T6 WELD HEAT AFFECT ZONE	PLATE							X
7010	173651	PLATE	X			X			X
7039	164	PLATE					X		
7049	177	FORGING EXTRUSION EXTRUDED BAR	X	X	X	X	X		X
	173 INTEGRALLY STIFFENED	EXTRUSION							X
	17351	PLATE	X				X		

TABLE 8.0.1 (con't)

## AVAILABLE DATA FOR ALUMINUM ALLOYS

ALLOY	CONDITION/HT	PRODUCT FORM	K1C	KIC	R CURVES	TA/DN	DA/DT	K1SCC
7049	T73511-HIGH PURITY	EXTRUSION EXTRUDED BAR	X			X		
	T73511 LOW PURITY	EXTRUSION EXTRUDED BAR	X			X		
	T73511 MEDIUM PURITY	EXTRUSION EXTRUDED BAR	X			X		
7050	T7352	FORGING	X			X		X
	T76	EXTRUDED BAR	X					
	T6	SHEET EXTRUSION				X		X
	T7F54	FORGING	X					
	T73	FORGING				X		
	T7351	PLATE	X			X		
	T7351X	EXTRUSION				X		
	T73511	EXTRUSION				X		
	T73511-HIGH PURITY	EXTRUSION EXTRUDED BAR	X			X		
	T7352	FORGING	X					
7051	T736	FORGING	X			X		X
	T73651	PLATE EXTRUSION	X			X		X
	T73652	FORGING	X			X		

TABLE 8.0.1 (con't)

AVAILABLE DATA FOR ALUMINUM ALLOYS

ALLOY	CONDITION/UT	PRODUCT FORM	KIC	KC	R CURVES	DA/DN	DA/DT	KISCC
7050	176	SHEET				X		
	T7451	PLATE	X			X		X
	T7651X	EXTRUSION				X		
	T74511	EXTRUSION PLATE	X			X	X	
7050 (ALCLAD)	176	SHEET		X		X		
7075	---	PLATE					X	
	16	FORGING	X	X				
		EXTRUSION	X	X				
		FORGED BAR	X					
		ROLLED BAR	X					
		SHEET		X		X		X
		PLATE		X		X		
7651		PLATE	X	X		X	X	X
		EXTRUSION	X					
		ROLLED BAR	X					
		SHEET		X				
		---					X	
76510		EXTRUSION	X			X		
		FORGED BAR EXTRUDED BAR	X			X		
76511		EXTRUSION	X			X		
773		FORGING	X					
		FORGED BAR	X			X		X
		SHEET		X				
77351		PLATE				X		
		EXTRUSION	X	X		X	X	X
		SHEET	X	X				
773510		EXTRUSION	X					
		EXTRUDED BAR				X	X	

TABLE 8.0.1 (con't)

## AVAILABLE DATA FOR ALUMINUM ALLOYS

ALLOY	CONDITION/HT	PRODUCT FORM	KIC	KC	R CURVES	DA/DN	DA/DT	KISCC
7075	T73511	EXTRUSION EXTRUDED BAR	X			X		X
		EXTRUSION EXTRUDED BAR	X			X		
	T73511 HIGH PURITY	EXTRUSION EXTRUDED BAR	X			X		
		EXTRUSION EXTRUDED BAR	X			X		
	T73511 LOW PURITY	EXTRUSION EXTRUDED BAR	X			X		
		EXTRUSION EXTRUDED BAR	X			X		
	T73511 MEDIUM PURITY	EXTRUSION EXTRUDED BAR	X			X		
		EXTRUSION EXTRUDED BAR	X			X		
	T7352	FORGING EXTRUSION BILLET PLATE	X			X		X
		FORGING EXTRUSION BILLET PLATE	X			X		X
	T73652	FORGING EXTRUSION BILLET PLATE	X			X		X
		FORGING EXTRUSION BILLET PLATE	X			X		X
7075 (ALCLAD)	T6	EXTRUSION EXTRUDED BAR	X			X		X
		EXTRUSION EXTRUDED BAR	X			X		X
	T7651	EXTRUSION EXTRUDED BAR	X			X		X
		EXTRUSION EXTRUDED BAR	X			X		X
	T6	EXTRUSION EXTRUDED BAR	X			X		X
		EXTRUSION EXTRUDED BAR	X			X		X
	T7651	EXTRUSION EXTRUDED BAR	X			X		X
		EXTRUSION EXTRUDED BAR	X			X		X
	T6	EXTRUSION EXTRUDED BAR	X			X		X
		EXTRUSION EXTRUDED BAR	X			X		X
	T7651	EXTRUSION EXTRUDED BAR	X			X		X
		EXTRUSION EXTRUDED BAR	X			X		X

TABLE 8.0.1 (con't)

AVAILABLE DATA FOR ALUMINUM ALLOYS

ALLOY	CONDITION/HT	PRODUCT FORM	KIC	KC	R	CURVES	DA/DN	DA/DT	KISCC
7079	1651	PLATE SHEET	X	X	X		X	X	X
	1651+50HR AT 320F	PLATE					X		
	1651+500HR AT 320F	PLATE						X	
	1651	FORGING	X				X		
	1651	PLATE	X						
	16	SHEET		X					
		FORGING FORCED BAR	X						
7080	17	PLATE					X		
7080	17E69	PLATE					X		
7080	17E70	PLATE					X		
7149	173511	EXTRUSION	X				X		
7150	1651	PLATE					X		
7175	166	FORGING	X					X	X
	173	FORGING EXTRUSION	X X						
	173511	EXTRUSION	X	X					X
	17352	FORGING	X						
	17354	FORGING					X		

TABLE 8.0.1 (con't)

AVAILABLE DATA FOR ALUMINUM ALLOYS

ALLOY	CONDITION/TIT	PRODUCT FORM	KIC	KC	R CURVES	DA/DN	DA/DT	KISCC
7175	1736	FORGING	X			X	X	X
	173652	FORGING	X			X		X
	176511	EXTRUSION	X					
7175	16	SHEET		X		X		
	1651	PLATE EXTRUSION SHEET	X X X	X		X	X	
	16510	EXTRUSION	X			X		
	1651+0HR AT 160F	PLATE					X	
	1651+12HR AT 300F	PLATE					X	
	1651+0HR AT 500F	PLATE					X	
7175	176	SHEET				X		
	17651	PLATE	X	X		X	X	
	176510	EXTRUSION FORGED BAR EXTRUDED BAR	X X X X			X		
	176511	EXTRUSION	X					
	176	SHEET		X				
	176	SHEET		X				
	176							



TABLE 8.0.1 (con't)

AVAILABLE DATA FOR ALUMINUM ALLOYS

ALLOY	CONDITION	PRODUCT FORM	K1C	KIC	R CURVES	DA/DN	DA/DT	KISCC
7075	T6	PLATE	X					
	T61	SHEET		X		X		
		PLATE		X		X		
	T6151	SHEET				X		
	T651	PLATE	X			X		
	T651 (SP)	PLATE	X					
	T73	PLATE	X					
	T7351	PLATE	X	X	X	X		X
	T7351 (SP)	PLATE	X					
	T746	FORGING	X					
	T76	SHEET				X		
	T761	SHEET		X		X		X
		PLATE		X		X		
7075 (Al-Cu-Mg)	T7651	PLATE	X	X	X	X		X
	T7651 (SP)	PLATE	X					
	T61	SHEET		X		X		
		PLATE		X				
	T73	SHEET		X				
	T731	PLATE		X				
		SHEET		X				
	T761	SHEET		X		X		
		PLATE		X				

TABLE 8.0.2

PLANE STRAIN FRACTURE TOUGHNESS VALUES OF ALUMINUM ALLOYS AT ROOM TEMPERATURE

ALLOY	CONDITION/ HT	PRODUCT FORM	RANGE OF PRODUCT THICKNESSES (IN)	K1C (KSI SQRT(IN))					
				L-T			T-L		
				SPECIMEN THICK *	MEAN	STD DEV	SPECIMEN THICK *	MEAN	STD DEV
7001	T73	PLATE	1 37	1 36	24 1	1 7	1 36	20 7	1 8
7005	T6351	PLATE	3 00	2 95	46 7	1 0	2 96	39 7	0 9
7010	T73651	PLATE	2 00	0 75	33 5	4 6	0 75	27 9	2 8
7049	T73	FORGING	1 00-7 10	0 50	30 8	3 0	1 00	21 9	2 5
	T73	EXTRUSION	3 00	1 00	28 1	0 7	1 00	25 2	0 5
		EXTRUDED BAR	3 25-3 50	1 00	33 2	2 7	1 00	22 0	0 5
	T7351	PLATE	2 00-4 00	---	---	---	0 75	26 1	1 7
	T73511 HIGH/ PURITY	EXTRUDED BAR	1 50	1 25	33 9	0 1	1 25	26 0	0 1
	T73511-Low/ PURITY	EXTRUDED BAR	1 50	1 25	23 8	0 3	1 25	18 1	0 1
	T73511 MEDIUM/ PURITY	EXTRUDED BAR	1 50	1 25	29 7	0 8	1 25	22 1	0 5
	T7352	FORGING	3 00-7 10	2 00	38 2	1 0	---	---	---
	T76	EXTRUDED BAR	3 25-3 50	1 00	32 7	1 7	1 00	20 0	0 3
7050	T7656	FORGING	5 00	---	---	---	0 75	28 9	3 9
	T7351	PLATE	1 00-6 00	1 00	34 8	3 9	1 50	30 0	2 6
	T73511-HIGH/ PURITY	EXTRUDED BAR	1 50	1 25	36 2	3 2	1 25	24 1	0 2
	T776	FORGING	3 00-6 00	0 70	32 3	2 3	1 00	23 4	1 0
	T73651	PLATE	1 00-6 00	0 98	31 9	3 9	0 99	28 7	4 7

\* MINIMUM SPECIMEN THICKNESS (IN)

TABLE 8.0.2 (con't)

PLANE STRAIN FRACTURE TOUGHNESS VALUES OF ALUMINUM ALLOYS AT ROOM TEMPERATURE

ALLOY	CONDITION/ HT	PRODUCT FORM	RANGE OF PRODUCT THICKNESSES (IN)	K <sub>IC</sub> (KSI SQRT(IN))			
				1-T		5-L	
				SPECIMEN THICK *	MEAN	STD DEV	SPECIMEN THICK *
7050	17-652	FORGING	3.50-7.50	1.50	31.1	2.5	1.50
	17-651	PLATE	1.00	1.00	30.8	0.3	---
7054	16	FORGING	0.50-0.89	0.50	24.3	0.1	0.25
		EXTRUSION	2.00	---	---	---	0.75
	17-51	PLATE	0.37-5.00	0.51	26.5	2.0	0.30
		EXTRUSION	3.00-5.00	1.50	31.1	0.5	1.50
70510		ROLLED BAR	5.00	1.50	34.1	0.5	---
	16-510	EXTRUSION	0.68-3.50	0.50	27.5	2.1	0.50
		FORGED BAR	0.68-5.00	0.62	29.2	3.4	0.50
	16-511	EXTRUSION	1.25	1.22	27.9	1.4	1.17
7051	17-5	FORGING	1.00	---	---	---	---
	17-51	PLATE	1.00-4.00	0.51	29.4	2.2	0.51
	17-510	EXTRUSION	0.68-3.50	---	---	---	0.50
	17-511	EXTRUSION	3.50	1.63	39.6	3.1	1.75
70511 HIGH/ PURITY		EXTRUDED BAR	1.50	1.25	43.0	1.7	1.25
	17-511 LOW/ PURITY	EXTRUDED BAR	1.50	1.25	27.3	0.2	1.25
	17-511 MEDIUM/ PURITY	EXTRUDED BAR	1.50	1.25	30.6	0.2	1.25
	17-52	FORGING	2.00-6.00	0.75	33.6	3.1	0.75
7052	17-652	FORGING	6.00	2.00	35.0	1.8	1.75

\* MINIMUM SPECIMEN THICKNESS (IN)

TABLE 8.0.2 (con't)

PLANE STRAIN FRACTURE TOUGHNESS VALUES OF ALUMINUM ALLOYS AT ROOM TEMPERATURE

ALLOY	CONDITION/ -T	PRODUCT FORM	RANGE OF PRODUCT THICKNESSES (IN)	KIC (KSI SQRT(IN))									
				L-T			T-L			S-L			
				SPECIMEN THICK #	MEAN	STD DEV	SPECIMEN THICK #	MEAN	STD DEV	SPECIMEN THICK #	MEAN	STD DEV	
7075	T7651	PLATE	0.56-2.60	0.75	28.5	1.5	0.50	23.1	2.0	0.38	17.8	1.5	
	T76511	EXTRUSION	1.44-7.04	1.17	35.7	4.4	1.25	23.6	2.8	---	---	---	
7075 (ALCLAD)	T7651	PLATE	0.50-0.62	0.62	28.6	2.2	0.50	25.2	1.9	---	---	---	
	T6	PLATE	3.00	1.00	33.0	2.9	---	---	---	---	---	---	
7079	T651	PLATE	1.00-5.00	0.97	27.6	1.8	0.50	23.3	2.0	0.50	18.6	3.2	
	T652	FORGING	2.00-6.00	0.75	27.8	2.2	0.75	23.1	2.2	0.25	18.1	0.7	
	T651	PLATE	1.37-1.50	1.00	28.6	1.6	1.00	21.3	3.4	---	---	---	
7149	T76511	EXTRUSION	3.00	1.01	31.5	0.8	1.01	24.2	0.3	---	---	---	
7175	T66	FORGING	1.00	---	---	---	0.50	23.2	3.1	0.50	20.8	1.1	
	T63	FORGING	1.00-8.50	---	---	---	---	---	---	0.50	27.1	1.2	
	T76511	EXTRUSION	1.30-1.80	0.50	32.8	6.5	0.50	27.0	4.9	---	---	---	
	T652	FORGING	0.75	---	---	---	0.62	24.5	0.5	---	---	---	
	T736	FORGING	1.00-4.00	0.50	31.2	3.8	0.50	26.4	3.6	0.50	25.3	2.1	
7176	T73652	FORGING	1.25-3.10	1.25	32.7	8.0	---	---	---	---	---	---	
	T76511	EXTRUSION	1.40-3.75	0.60	32.9	3.5	0.60	22.6	2.5	0.75	20.9	1.3	
7178	T651	PLATE	0.50-1.37	0.50	25.3	1.9	0.46	21.5	1.8	0.50	15.0	0.3	
	T6510	EXTRUSION	0.68-3.50	---	---	---	0.50	18.5	1.3	1.00	14.5	0.1	
	T7651	PLATE	0.50-2.00	0.45	27.8	1.8	0.45	23.1	2.4	0.50	17.3	0.4	
	T76510	EXTRUSION	0.68-3.50	0.62	30.5	0.9	0.62	26.8	1.1	1.00	16.2	0.4	
	FORGED BAR			3.50	---	---	---	0.50	19.2	1.2	---	---	---

TABLE 8.0.2 (con't)

PLANE STRAIN FRACTURE TOUGHNESS VALUES OF ALUMINUM ALLOYS AT ROOM TEMPERATURE

ALLOY	(UNIONION/ H)	PRODUCT FORM	RANGE OF PRODUCT THICKNESSES (IN)	KIC (KSI SQRT(IN))			T-L			S-L		
				SPECIMEN THICK *	MEAN	STD DEV	SPECIMEN THICK *	MEAN	STD DEV	SPECIMEN THICK *	MEAN	STD DEV
7175	175511	EXTRUSION	0.40-1.44	0.40	25.7	0.3						
	1651	PLATE	0.62-2.62	0.86	40.1	2.4	0.65	34.6	3.5	1.00	32.9	2.5
7475	1651 (SP)	PLATE	1.00-2.00	1.28	35.3	1.9	1.28	34.4	2.1	0.50	27.3	1.6
	17751	PLATE	1.25-4.00	1.27	47.1	4.9	1.00	37.1	4.0	0.50	30.6	2.6
17351 (SP)	1751	PLATE	1.75-3.25				0.75	37.6	2.5			
	1751	PLATE	0.87-2.00	0.95	40.4	2.3	0.89	34.0	2.9	0.75	27.6	0.8
17651 (SP)	1751	PLATE	1.75-2.00	1.79	42.4	2.9	1.00	35.7	0.4	0.75	27.3	2.1

\* MINIMUM SPECIMEN THICKNESS (IN)

TABLE 8.0.3.1

PLANE STRESS AND TRANSITIONAL FRACTURE TOUGHNESS OF  
7000 SERIES ALUMINUM ALLOYS (WITH BUCKLING CONSTRAINTS)

ALLOY	CONDITION/HT	TEST TEMP. (°F)	SPECIMEN ORIENT	SPECIMEN WIDTH	YIELD STRENGTH (KSI)	SPECIMEN THICKNESS (IN.) = 0.010	0.050-	0.080	0.090-	0.100	0.120	0.250
7050(Alclad)	T6	R. T.	L-T	20.0	67.2	114.1/7.6(2)						
7075	T6	R. T.	L-T	12.0	75.9				71.9/2.8(26)			
				24.0	75.9				71.5/0.2(2)			
				36.0	75.9				72.8/6.1(5)			
		R. T.	T-L	15.0	76.2							76.6/0.3(2)
7075(Alclad)	T6	R. T.	L-T	24.0	75.5	73.4/8.2(10)						
		R. T.	L-T	8.0	78.3	63.4/5.5(6)						
		R. T.	L-T	36.0	60.5							119.9/24.0(2)
		R. T.	L-T	15.0	67.4	8.8/4.1(2)						
7475(Alclad)	T6	R. T.	L-T	6.0	73.1				60.1/5.1(6)			
				12.0	73.1				70.1/7.2(17)			
				24.0	73.1				69.3/10.4(20)			
		R. T.	L-T	20.0	69.4						129.8/3.0(2)	

Mean/Standard Deviation (Number of Specimens)

TABLE 8.0.3.2

PLANE STRESS AND TRANSITIONAL FRACTURE TOUGHNESS  
OF 7000 SERIES ALUMINUM ALLOYS (WITHOUT BUCKLING CONSTRAINTS)

ALLOY	CONDITION/ HT	TEST TEMP (°F)	SPECIMEN ORIENT	WIDTH (IN)	FIELD STRENGTH (KSI)	SPECIMEN THICKNESS (IN)	K <sub>IC</sub> (Ksi/in)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
							= 0.010 0.020 0.030 0.040 0.063 0.080-0.090 0.125 0.160 0.180 0.250 0.500 1.000																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
7001	T75	R.T.	L-T	20.0	-71																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											

Mean/Standard Deviation (Number of Specimens)

TABLE 8.0.3.2 (con't)

PLANE STRESS AND TRANSITIONAL FRACTURE TOUGHNESS  
OF 7000 SERIES ALUMINUM ALLOYS (WITHOUT BUCKLING CONSTRAINTS)

ALLOY	CONDITION/ HT	TEST TEMP (°F)	SPECIMEN ORIENT	WIDTH (IN)	FIELD STRENGTH (KSI)	SPECIMEN THICKNESS (IN)	$K_{IC}$ (Ksi√in)									
							= 0.010 0.020 0.030 0.040 0.063 0.080-0.090 0.125 0.160 0.180 0.250 0.500 1.000									
7075	T651	R.T.	T-L	3.0	≥75		48.7/ 1.2(9)	43.9/ 3.3(16)	50.7/ 4.6(11)	45.0/ 1.5(2)	47.9/ 2.7(2)	35.2/ 3.2(12)				
				4.0	≥74											
				14.0	77.2											
				20.0	≥75											
7050	T73	R.T.	L-T	16.0	60.0		82.9/ 3.7(2)									
				8.0	62.1											
				16.0	61.1											
				20.0	≥61											
7050	T7351	R.T.	L-T	8.0	62.1											
				16.0	61.1											
				20.0	≥61											
				36.0	61.1											
7050	T6	R.T.	L-T	20.0	63.6											
				15.0	≥70		82.4/ 3.9(2)	82.9/ 9.4(2)								
				9.0	63.0			55.0/ 7.3(12)								
				20.0	63.0			51.9/ 3.1(14)								
7050	T6	R.T.	L-T	30.0	71.8											



TABLE 8.0.3.2 (con't)

PLANE STRESS AND TRANSITIONAL FRACTURE TOUGHNESS  
OF 7000 SERIES ALUMINUM ALLOYS (WITHOUT BUCKLING CONSTRAINTS)

ALLOY	CONDITION/ HT	TEST TEMP (°F)	SPECIMEN ORIENT	WIDTH (IN)	FIELD STRENGTH (KSI)	SPECIMEN THICKNESS (IN)	K <sub>c</sub> (Ksi/in)									
							= 0.010 0.020 0.030 0.040 0.063 0.080-0.090 0.125 0.160 0.180 0.250 0.500 1.000									
7075 (Al-Land)	T <sub>0</sub>	R.T.	T-L	15.0	≥66		65.1/ 0.4(2)	78.4/ 2.6(2)	90.5/ 0.0(2)							
				30.0	69.5					75.5/ 0.4(2)	52.0/ 1.0(2)					
	H4		T-L	16.0	69.1					67.8/ 1.5(2)						
				3.0	69.8					49.7/ 0.6(2)						
7075	T <sub>0</sub>	R.T.	L-T	3.0	74.7									51.6/ 1.8(3)		64.9/1.6(12)
				20.0	≥75											
			T-L	3.0	≥72						51.7/ 0.6(3)			40.5/ 2.6(2)		
				20.0	≥72											35.1/1.2(12)
7075	T <sub>0</sub>	R.T.	L-T	2.0	≥82									46.3/ 3.3(11)		
				3.0	≥83											
				15.0	≥82									50.4/ 5.0(14)		
				2.0	≥80											
7075			T-L	3.0	≥78									38.8/ 3.8(13)		
				15.0	≥78									46.5/ 1.8(5)		

Mean/Standard Deviations (Number of Specimens)

# PLANE STRESS AND TRANSITIONAL FRACTURE TOUGHNESS OF 7000 SERIES ALUMINUM ALLOYS (WITHOUT BUCKLING CONSTRAINTS)

8.0-18

TABLE 8.0.3.2 (con't)

PLANE STRESS AND TRANSITIONAL FRACTURE TOUGHNESS  
OF 7000 SERIES ALUMINUM ALLOYS (WITHOUT BUCKLING CONSTRAINTS)

ALLOY	CONDITION/ HT	TEST TEMP (°F)	SPECIMEN ORIENT WIDTH	FIELD STRENGTH (KSI)	SPECIMEN THICKNESS (IN)	K <sub>c</sub> (Ksi/in)					
7075 (Alclad)	T61	R.T.	L-T	16.0	70	0.010	0.020	0.030	0.040	0.063	0.080-0.090
						0.125	0.160	0.180	0.250	0.500	1.000
						84.3/ 12.0(8) 86.9/ 7.5(8)	94.7/ 3.1(2) 79.5/ 5.4(2)				
7061	T61	R.T.	L-T	16.0	64.5	0.010	0.020	0.030	0.040	0.063	0.080-0.090
						0.125	0.160	0.180	0.250	0.500	1.000
						92.3/ 8.0(6) 90.1/ 6.9(6)	91.7/ 2.5(2)				

Mean/Standard Deviation (Number of Specimens)

TABLE 8.0.4.1

COMPARISON OF FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS OF THE  
STRESS INTENSITY FACTOR FOR ALUMINUM ALLOYS

## TEST CONDITIONS

SPECIMEN  
ORIENTATION L-T

ENVIRONMENT LAB AIR AT R T

STRESS RATIO 0.00-0.10

FREQUENCY 0.10-30.00 HZ

ALLOY	CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQUENCY	FATIGUE CRACK GROWTH RATES (MICRO IN./CYCLE) FOR DELTA K LEVELS (KSI SQRT(IN)) =					
					2 5	5 0	10 0	20 0	50 0	100 0
7001	T75	SHEET	0 05	2 00				60 7		
7005	T6	SHEET	0 05	2 00			6 74	28 5		
7010	T73651	PLATE	0 10	20 00 25 00		250	2 83	56 5		
7049	T73511-HIGH PURITY	EXTRUSION	0 10	30 00				7 84		
	T73511-LOW PURITY	EXTRUSION	0 10	30 00				7 32		
	T73511-MEDIUM PURITY	EXTRUSION	0 10	30 00				3 44		
7050	T73511-HIGH PURITY	EXTRUSION	0 10	30 00				5 93		
	T726	FORGING	0 10	3 00- 10 00				11 9	58 7	
	T73651	PLATE	0 10	5 00- 10 00				7 68	47 3	
	T76	SHEET	0 00	13 30				7 60	40 1	
	T7651	PLATE	0 02	1 00- 20 00		580	8 04	22 9		

TABLE 8.0.4.1 (con't)

COMPARISON OF FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS OF THE  
STRESS INTENSITY FACTOR FOR ALUMINUM ALLOYS

TEST CONDITIONS -

SPECIMEN  
ORIENTATION L-T  
STRESS RATIO 0.00-0.10  
ENVIRONMENT LAB AIR AT R.T.  
FREQUENCY 0.10-30.00HZ

ALLOY	CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQUENCY	FATIGUE CRACK GROWTH RATES (MICRO IN./CYCLE) FOR DELTA K LEVELS (KSI SQRT(IN))					
					2.5	5.0	10.0	20.0	50.0	100.0
7075	T6	SHEET	0.02	1.00				103		
	T6	SHEET	0.02	3.00				92.8		
	T6	SHEET	0.02	10.00			14.0	60.0	5417	
	T6	SHEET	0.02	10- 30.00			11.0	54.5	20651	
	T651	PLATE	0.02	1.00- 30.00		1.64	1.18	66.6		
7351	T651	PLATE	0.02	10- 30.00			8.02	58.5		
	T6511	EXTRUSION	0.01	30.00		976	13.2	72.1		
	T73	PLATE	0.05	20.00	0564	561	11.0			
	T7351	PLATE	0.02	10- 20.00		293	5.65	59.4		
	T7351	PLATE	0.02	10.00			3.95	41.4		
173511-HIGH PURITY	T7351	PLATE	0.02	10.00			5.09	46.0	1538	
	T7351	PLATE	0.02	1.00			5.04	44.0		
	T73511-HIGH PURITY	EXTRUSION	0.10	30.00			6.39	31.3		
	T73511 LOW PURITY	EXTRUSION	0.10	30.00			8.00			
	T73511-MEDIUM PURITY	EXTRUSION	0.10	30.00			7.00			
T7352		BILLET	0.02	1.00- 30.00					32.5	

TABLE 8.0.4.1 (con't)

COMPARISON OF FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS OF THE  
STRESS INTENSITY FACTOR FOR ALUMINUM ALLOYS

TEST CONDITIONS

SPECIMEN ORIENTATION L-T  
STRESS RATIO 0.00-0.10  
ENVIRONMENT LAB AIR AT R.T.  
FREQUENCY 0.10-30.00HZ

ALLOY	CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQUENCY	FATIGUE CRACK GROWTH RATES (MICRO IN./CYCLE) FOR DELTA K LEVELS (KSI SQRT(IN)) =					
					2 5	5 0	10 0	20 0	50 0	100 0
7079	T6	SHEET	0.05	2.00				64 8		
	T6	BILLET	0.02	1.00- 30.00			10 7	110		
	T651	SHEET	0.05	2.00			14 0	92 6		

TABLE 8.0.4.1 (con't)

COMPARISON OF FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS OF THE  
STRESS INTENSITY FACTOR FOR ALUMINUM ALLOYSTEST CONDITIONS

SPECIMEN

ORIENTATION L-T

STRESS RATIO 0.00-0.10

ENVIRONMENT LAB AIR AT R.T.

FREQUENCY 0.10-30.00HZ

ALLOY	CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQUENCY	FATIGUE CRACK GROWTH RATES (MICRO IN./CYCLE) FOR DELTA K LEVELS (KSI SQRT(IN)) =							
					2 5	5 0	10 0	20 0	50 0	100 0		
7149	T73511	EXTRUSION	0 01	1 00- 20 00	1 64	8 32	57 9					
7175	T736	FORGING	0 02	10 00	9 87	56 8						
7175	T73652	FORGING	0 02	1 00- 20 00	7 92	33 3						
7175	T73652	FORGING	0 02	1 00- 18 00	8 03							
7178	T6	SHEET	0 02	10 00- 14 00	11 9	89 9						
7178	T6	SHEET	0 02	1 00- 5 00	12 6	109						
7178	T651	SHEET	0 02	10- 12 00	923	15 4	99 6					
7178	T651	PLATE	0 00	10- 20 00	799	13 1	56 8					
7178	T651	PLATE	0 02	10- 20 00	980	15 4	107					
7178	T76	SHEET	0 02	20 00	605	7 76	58 1	2653				

TABLE 8.0.4.1 (con't)

COMPARISON OF FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS OF THE  
STRESS INTENSITY FACTOR FOR ALUMINUM ALLOYS

## TEST CONDITIONS

SPECIMEN  
ORIENTATION L-T

STRESS RATIO 0 00-0 10

ENVIRONMENT LAB AIR AT R T

FREQUENCY 0 10-30 00HZ

ALLOY	CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQUENCY	FATIGUE CRACK GROWTH RATES (MICRO IN./CYCLE) FOR DELTA K LEVELS (KSI SQRT(IN)) =					
					2 5	5 0	10 0	20 0	50 0	100 0
7475	T61	PLATE	0 10	20 00			6 87			
	T6151	SHEET	0 10	20 00			5 52	40 7		
	T7351	PLATE	0 02	10- 20 00		216	5 00	37 1	2520	
	T7351	PLATE	0 10	20 00			5 55			
	T761	SHEET	0 10	20 00			5 41	33 1		
	T7651	SHEET	0 00	2 00- 30 00		254	4 52	42 3		
7475	T7651	PLATE	0 00	3 00 30 00			3 93	47 6	508	
	T61	SHEET	0 00	13 30			5 71	32 7		
7475 (AL CLAD)										



TABLE 8.0.4.2

COMPARISON OF FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS OF THE  
STRESS INTENSITY FACTOR FOR ALUMINUM ALLOYS

## TEST CONDITIONS

SPECIMEN ORIENTATION T-L	ENVIRONMENT	LAB AIR AT R T	FREQUENCY	STRESS RATIO	PRODUCT FORM	CONDITION/HT	FATIGUE CRACK GROWTH RATES (MICRO IN./CYCLE) FOR DELTA K LEVELS (KSI SQRT.IN.)			
							2 5	5 0	10 0	100 0
STRESS RATIO 0 00-0 10	FREQUENCY	0 10-30 00HZ								
7010	T73651	PLATE	0 10	20 00- 25 00				6 15	85 4	
7049	T73511-HIGH PURITY	EXTRUSION	0 10	30 00				7 81		
	T73511-LOW PURITY	EXTRUSION	0 10	30 00				9 13		
	T73511-MEDIUM PURITY	EXTRUSION	0 10	30 00				8 75		
7050	T73511-HIGH PURITY	EXTRUSION	0 10	30 00				3 47		
	T736	FORGING	0 10	10 00				6 75	101	
	T73651	PLATE	0 10	1 00- 10 00				8 45	49 4	
7075	T6	SHEET	0 00	13 30				5 45	42 6	
	T73511-HIGH PURITY	EXTRUSION	0 10	30 00				4 66	36 1	
	T73511-LOW PURITY	EXTRUSION	0 10	30 00				8 75		
	T7352	PLATE	0 02	10 00			474	6 78	66 2	4095
	T7352	PLATE	0 02	10 00			1 08	1 11		
	T7352	FORGING	0 02	10 00			1 86	14 4	126	
	T7352	FORGING	0 02	10 00					27 5	

TABLE 8.0.4.2 (con't)

COMPARISON OF FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS OF THE  
STRESS INTENSITY FACTOR FOR ALUMINUM ALLOYSTEST CONDITIONS

SPECIMEN ORIENTATION	T-L	ENVIRONMENT	LAB AIR AT R T	STRESS RATIO	PRODUCT FORM	CONDITION/HT	FATIGUE CRACK GROWTH RATES (MICRO IN./CYCLE) FOR DELTA K LEVELS (KSI SQRT(IN)) =	2 5	5 0	10 0	20 0	50 0	100 0
7075(AlCLAD)	T6			0 00	SHEET								
	T6			0 05	SHEET								
7079	T6			0 05	FORGING								
7149	T73511			0 10	EXTRUSION								
7175	T73652			0 02	FORGING								
7178	T651			0 00	PLATE								
7475	T6151			0 10	SHEET								
	T761			0 10	SHEET								
7475(AlCLAD)	T61			0 00	SHEET								
	T761			0 00	SHEET								

TABLE 8.0.5  
STRESS CORROSION CRACKING THRESHOLD DATA FOR 7000 SERIES  
ALUMINUM ALLOYS AT ROOM TEMPERATURE

ALLOY	CONDITION/HT	PRODUCT FORM	SPECIMEN ORIENTATION	ENVIRONMENTS					K <sub>Isc</sub> (Ksi $\sqrt{\text{in.}}$ )
				INDUSTRIAL ATMOSPHERE	SEACOAST ATMOSPHERE	SALT DICHROMATE ACETATE	SIMP TANK WATER	3-5% NaCl	
7005	T63	P	S-L					28.0	
7007	T6-Repaired	P	S-L					8.7	
	Weld-Fusion Line								
	T6-Repaired	P	S-L					16.3	
	Weld-Heat Affected Zone								
7010	T6-Repaired	P	S-L					10.6	
	Weld Center Line								
7010	173651	P	T-L					32.5(2)	
			S-L					17.0	
	173	F	S-L					19.0	
		E	L-S					20.4	
7019	173 Integrally	E	L-S					20.3	
	Stiffened		S-L					26.7	
	17352	F	L-T					19.4	
			T-L						27.6
7050	173651	P	T-L					29.1	
			S-L					27.8	
	T6	P	S-L					19.0	
	1651	P	L-L					26.3	
7075	17351	P	S-L	10.0	10.0	5.0		17.0	
			L-L					23.9	
	17351	P	S-L	20.0	20.0	19.0		21.0	
			L-L						35.6
7075	17351	P	S-L					18.0	
			L-L						
	17352	P	S-L					12.8(4)	
	17651	P	S-L						

TABLE 8.0.5 (con't)

STRESS CORROSION CRACKING THRESHOLD DATA FOR 7000 SERIES  
ALUMINUM ALLOYS AT ROOM TEMPERATURE

ALLOY	CONDITION/HT	PRODUCT FORM	SPECIMEN ORIENTATION	ENVIRONMENTS					K <sub>Isc</sub> (Ksi $\sqrt{\text{in.}}$ )
				INDUSTRIAL ATMOSPHERE	SEACOAST ATMOSPHERE	SALT ACETATE	DICHROMATE	SUMP TANK WATER	
7070	16	P	S-L						
	1651	P	S-L	9.0	9.0		6.0		6.6(4) 3.0
7170	1735-11	F	S-L						
	1736	F	L-L						24.4(9) 30.6
		F	S-L						18.7
	173652	F	L-L						27.6(2)
7470	173651	P	S-L					22.0	
		P	L-L					26.6	
	173651	P	L-L					30.9 30.8	

TABLE 8.1.1.1

MEAN PLANE STRAIN FRACTURE TOUGHNESS DATA OF  
ALUMINUM ALLOY 7051 AT ROOM TEMPERATURE

CONDITION	K <sub>IC</sub> (KSI) ± STANDARD DEVIATION	NUMBER OF SPECIMENS	
		L-T	S-L
1	24.1 ± 1.2 (4)	20.7 ± 1.8 (5)	---

TABLE 8.1.2.1

CONDITION	ALUMINUM															
	7001					K(1C)										
	--PRODUCT-- FORM	THICK (IN)	TEST TEMP (F)	SPECIMEN ORIENT	YIELD STRENGTH (KSI)	-----SPECIMEN-----			CRACK LENGTH (IN)	2.5* (IN)	K(1C)/TYS)**2 (KSI*SQRT IN)	K(1C) MEAN (KSI)	STAN DEV	DATE	REFER	
						WIDTH (IN)	THICK (IN)	DESIGN								
						W	B	A								
T75	P	1.37	R.T.	L-T	70.6	3.000	1.381	NB	1.463	0.24	22.00			1973	86213	
		1.37			70.6	3.000	1.382	NB	1.560	0.27	23.40			1973	86213	
		1.37			72.2	3.000	1.360	NB	1.584	0.32	25.80			1973	86213	
		1.37			72.2	3.000	1.364	NB	1.513	0.30	25.00	24.1/	1.7	1973	86213	
T75	P	1.37	R.T.	T-L	69.6	3.000	1.376	NB	1.587	0.23	21.30			1973	86213	
		1.37			69.6	3.000	1.377	NB	1.532	0.29	23.60			1973	86213	
		1.37			70.6	3.000	1.360	NB	1.564	0.19	19.60			1973	86213	
		1.37			71.6	3.000	1.364	NB	1.463	0.19	19.90			1973	86213	
		1.37			71.6	3.000	1.381	NB	1.584	0.18	19.10	20.7/	1.8	1973	86213	
T75	P	1.37	88	S-L	65.9	1.000	0.500	CT	0.494	0.14	15.80			1973	86213	
		1.37			65.9	1.000	0.500	CT	0.478	0.14	15.60			1973	86213	
		1.37			65.9	1.000	0.500	CT	0.510	0.15	15.90	15.8/	0.2	1973	86213	

TABLE 8.1.2.2

CONDITION	--PRODUCT--		TEST SPEC YIELD STR (KSI)	ALUMINUM		7001		K(C)		CRACK LENGTH CROSS STRESS				K(APP) STAN		K(C) STAN		DATE	REFER				
	FORM	THICK (IN)		---SPECIMEN---		INIT (IN)	FINAL (IN)	ONSET (KSI)	MAX (KSI)	K(APP) (KSI*SQRT IN)	MEAN DEV (KSI*SQRT IN)	STAN	DEV	K(C) (KSI*SQRT IN)	MEAN DEV (KSI*SQRT IN)	STAN	DEV						
				W	B															2A(O)	2A(F)	S(O)	S(MAX)
T75	S	0.12	R.T.	L-T	3.000	0.119	1.070	1.480	---	32.90	46.34	---	---	59.35*	---	---	---	1973	86213				
					3.000	0.119	1.090	1.360	---	32.00	45.64	---	---	53.76*	---	---	---	---	1973	86213			
					3.000	0.125	1.060	1.290	---	34.40	48.15*	---	---	53.43*	---	---	---	---	1973	86213			
					3.000	0.124	1.110	1.650	---	33.30	48.10	---	---	66.52*	---	---	---	---	1973	86213			
					3.000	0.122	1.080	1.350	---	31.00	43.94	---	---	51.77*	---	---	---	---	1973	86213			
					3.000	0.122	1.110	1.450	---	33.10	47.81	---	---	58.65*	---	---	---	---	1973	86213			
					3.000	0.125	1.110	1.320	---	32.90	47.52	---	---	53.97*	---	---	---	---	1973	86213			
					3.000	0.126	1.100	1.380	---	30.90	44.35	---	---	52.53*	---	---	---	---	1973	86213			
					3.000	0.127	1.080	1.240	---	32.60	46.21	---	---	50.98*	---	---	---	---	1973	86213			
					3.000	0.125	1.090	1.400	---	33.40	47.64	---	---	57.46*	---	---	---	---	1973	86213			
					3.000	0.124	1.090	1.540	---	32.20	45.93	---	---	60.20*	---	---	---	---	1973	86213			
3.000	0.126	1.090	1.410	---	32.80	46.79	---	---	56.76*	---	---	---	---	1973	86213								
T75	P	1.00	R.T.	L-T	20.000	1.000	7.000	8.420	---	9.10	32.68	---	---	37.25	---	---	---	1973	86213				
					20.000	1.000	7.000	8.650	---	6.40	22.98	---	---	26.75	---	---	---	---	1973	86213			
					20.000	1.000	7.000	8.590	---	9.40	33.76	---	---	39.07	---	---	---	---	1973	86213			
					20.000	1.000	7.000	8.420	---	9.50	34.12	---	---	38.89	---	---	---	---	1973	86213			
					20.000	1.000	7.000	8.420	---	9.00	32.32	---	---	36.84	---	---	---	---	1973	86213			
					20.000	1.000	7.000	7.650	---	6.40	22.98	---	---	24.43	---	---	---	---	1973	86213			
					20.000	1.000	7.000	8.050	---	6.10	21.91	---	---	24.15	---	---	---	---	1973	86213			
					20.000	1.000	7.000	7.720	---	6.70	24.06	---	---	25.74	---	---	---	---	1973	86213			
					20.000	1.000	7.000	8.500	---	8.60	30.88	---	---	35.46	---	---	---	---	1973	86213			
					20.000	1.000	7.000	8.650	---	9.10	32.68	---	---	38.03	---	---	---	---	1973	86213			
					20.000	1.000	7.000	8.420	---	9.00	32.32	---	---	36.84	---	---	---	---	1973	86213			
20.000	1.000	7.000	8.020	---	8.40	30.17	---	---	29.2/ 4.8	---	---	---	---	1973	86213								
T75	S	0.12	R.T.	T-L	3.000	0.124	1.210	1.240	---	22.00	33.79	---	---	34.40	---	---	---	1973	86213				
					3.000	0.124	1.130	1.250	---	24.60	35.97	---	---	38.70	---	---	---	---	1973	86213			
					3.000	0.125	1.120	1.280	---	28.70	41.71	---	---	45.97	---	---	---	---	1973	86213			
					3.000	0.125	1.130	1.240	---	24.60	35.97	---	---	38.47	---	---	---	---	1973	86213			
					3.000	0.128	1.140	1.400	---	24.20	35.61	---	---	41.63	---	---	---	---	1973	86213			
					3.000	0.128	1.110	1.320	---	24.00	34.66	---	---	39.37	---	---	---	---	1973	86213			
					3.000	0.126	1.120	1.220	---	24.80	36.04	---	---	38.32	---	---	---	---	1973	86213			
					3.000	0.126	1.160	1.270	---	25.20	37.54	---	---	40.12	---	---	---	---	1973	86213			
					3.000	0.123	1.090	1.220	---	25.90	36.94	---	---	40.02	---	---	---	---	1973	86213			

\*NOTE- NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STD. DEV.

TABLE 8.1.2.2 (Con't)

CONDITION	--PRODUCT--			TEST SPEC OR THICK TEMP (IN) (F)	YIELD STR (KSI)	ALUMINUM		7001		K(C)				
	FORM	THICK (IN)	---SPECIMEN---			CRACK LENGTH		CROSS STRESS						
			W			B	THICK (IN)	INIT (IN)	FINAL (IN)	ONSET (KSI)	MAX (KSI)			
												2A(O)	2A(F)	S(O)
BUCKLING OF CRACK EDGES NOT RESTRAINED														
175	S	0.12	R T	T-L	68.6	3.000	0.123	1.100	1.270	---	24.10	34.59	38.37	1973 86213
		0.12			68.6	3.000	0.124	1.110	1.300	---	24.80	35.82	40.20	1973 86213
		0.12			68.6	3.000	0.124	1.090	1.300	---	23.80	33.95	39.5/ 2.1	1973 86213
175	P	1.00	R T	T-L	69.6	20.000	1.000	7.000	7.650	---	7.40	26.57	28.24	1973 86213
		1.00			69.6	20.000	1.000	7.000	7.900	---	7.20	25.86	28.12	1973 86213
		1.00			69.6	20.000	1.000	7.000	8.050	---	7.10	25.50	28.11	1973 86213
		1.00			69.6	20.000	1.000	7.000	8.050	---	7.00	25.14	27.71	1973 86213
		1.00			70.6	20.000	1.000	7.000	8.330	---	8.30	29.81	33.70	1973 86213
		1.00			70.6	20.000	1.000	7.000	7.950	---	7.90	28.37	30.99	1973 86213
		1.00			70.6	20.000	1.000	7.000	8.320	---	8.10	29.09	32.86	1973 86213
		1.00			70.6	20.000	1.000	7.000	8.460	---	8.00	28.73	32.87	1973 86213
		1.00			71.3	20.000	1.000	7.000	7.900	---	6.90	24.78	26.95	1973 86213
		1.00			71.3	20.000	1.000	7.000	7.000	---	6.50	23.34	23.34	1973 86213
		1.00			71.3	20.000	1.000	7.000	8.050	---	6.60	23.70	26.13	1973 86213
		1.00			71.3	20.000	1.000	7.000	7.900	---	6.40	22.98	26.2/ 2.4	1973 86213



TABLE 8.1.3.1

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.1.3.1 INDICATING EFFECT  
OF ENVIRONMENT

MATERIAL: ALUMINUM 7001  
CONDITION: T75

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		E= R. T. LAB AIR			
DELTA K MIN	A:	10.34	8.13		
	B:				
	C:				
	D:				
		13.00	18.1		
		16.00	32.0		
		20.00	60.7		
DELTA K MAX	A:	20.63	67.3		
	B:				
	C:				
	D:				

ROOT MEAN SQUARE 4.22  
PERCENT ERROR

LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25 2  
SUMMARY 1.25-2.0  
(NP/NA) >2.0

CONDITION/HT: T75  
 FORM: 0.16" TH SHEET  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T  
 STRESS RATIO: +0.05  
 FREQUENCY: 2.00

YIELD STRENGTH: 72.2 KSI  
 ULT. STRENGTH: 79.6 KSI  
 SPECIMEN THK: 0.163"  
 SPECIMEN WIDTH: 9.010- 9.030"  
 REFERENCES: 86734

ALUM.  
 ALLOY

7001

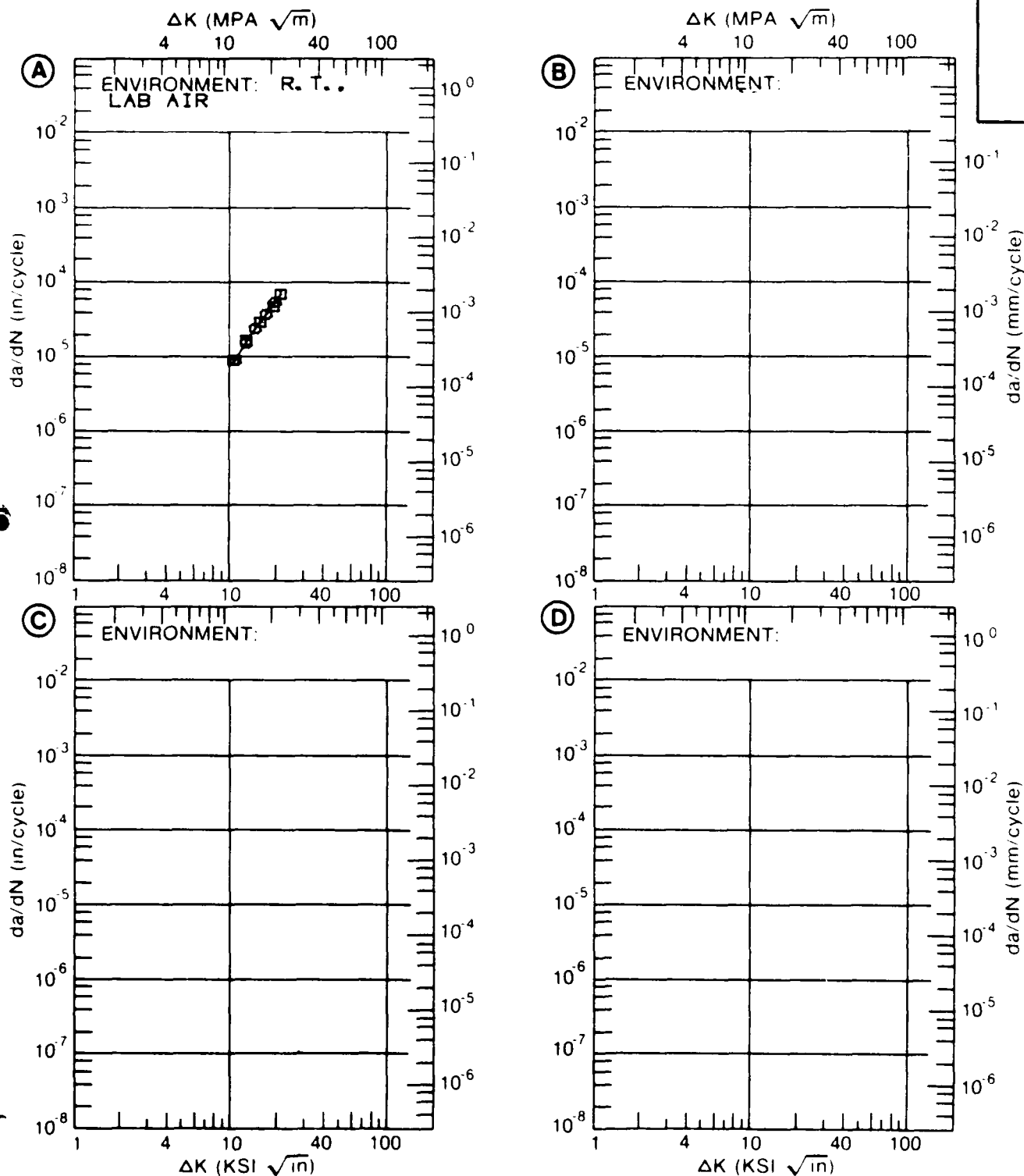


Figure 8.1.3.1

TABLE 8.2.1.1

MEAN PLANE STRAIN FRACTURE TOUGHNESS DATA OF  
ALUMINUM ALLOY 7005 AT ROOM TEMPERATURE

CONDITION/HT	MEAN K <sub>IC</sub> ± STANDARD (KSI SQRT(IN)) DEVIATION		PLATE	(NUMBER OF SPECIMENS)
	I-T	I-L		
16351	40.7 ± 1.0 (2)	39.7 ± 0.9 (3)	S-L	---

TABLE 8.2.2.1

CONDITION	ALUMINUM				7005				K(1C)				DATE	REFER
	---PRODUCT--- FORM	THICK (IN)	TEST TEMP (F)	SPECIMEN ORIENT	YIELD STRENGTH (KSI)	-----SPECIMEN-----		CRACK LENGTH (IN)	2.5* (K(1C)/TYS)**2 (IN)	K(1C) MEAN (KSI*SQRT IN)	K(1C) STAN DEV			
						WIDTH (IN)	THICK (IN)					DESIGN		
						W	B	A						
T6351	P	3.00	R. T.	L-T	48.2	6.000	2.953	NB	2.922	2.42	47.40	46.7/	1.0	1973 86213
		3.00			48.2	6.000	2.958	NB	2.927	2.28	46.00			1973 86213
T6351	P	3.00	R. T.	T-L	49.0	6.000	2.958	NB	2.960	1.56	38.70			1973 86213
		3.00			49.0	6.000	2.964	NB	3.107	1.67	40.00			1973 86213
		3.00			49.0	6.000	2.962	NB	2.943	1.71	40.50	39.7/	0.9	1973 86213
T6351	P	3.00	82	T-L	49.0	4.500	2.250	NB	2.260	1.72	40.60			1973 86213
T6351	P	3.00	88	S-L	47.5	2.500	1.250	CT	1.209	0.84	27.60	27.6/	0.1	1973 86213
		3.00			47.5	2.500	1.250	CT	1.196	0.84	27.50			1973 86213

TABLE 8.2.2.2

CONDITION	--PRODUCT-- FORM	THICK (IN)	TEST SPEC OR (F)	YIELD STR (KSI)	ALUMINUM		7005		K(C)		K(C)	
					---SPECIMEN---		CRACK LENGTH		GROSS STRESS		K(APP) STAN	
					WIDTH (IN)	THICK (IN)	INIT (IN)	FINAL (IN)	ONSET (KSI)	MAX (KSI)	MEAN (KSI)	DEV (IN)
					W	B	2A(O)	2A(F)	S(O)	S(MAX)		
BUCKLING OF CRACK EDGES NOT RESTRAINED												
T6	S	0.06	R.T.	L-T	43.4	3.000	0.064	1.113	---	---	28.60	41.36*
		0.06			43.4	3.000	0.064	1.115	---	---	29.10	42.13*
T6	S	0.12	R.T.	L-T	45.1	3.000	0.125	1.123	---	---	29.80	43.36*
		0.12			45.1	3.000	0.125	1.120	---	---	29.60	43.02*
T6	P	0.25	R.T.	L-T	49.8	4.000	0.258	1.597	---	---	32.40	57.00*
		0.25			49.8	4.000	0.258	1.597	---	---	32.20	56.65*
T6	S	0.06	R.T.	T-L	44.0	3.000	0.064	1.183	---	---	28.60	43.18*
		0.06			44.0	3.000	0.064	1.147	---	---	28.80	42.95*
T6	S	0.12	R.T.	T-L	45.6	3.000	0.125	1.110	---	---	30.10	43.47*
		0.12			45.6	3.000	0.125	1.123	---	---	30.00	43.65*
T6	P	0.25	R.T.	T-L	50.6	4.000	0.258	1.598	---	---	32.40	57.05*
		0.25			50.6	4.000	0.258	1.603	---	---	32.10	56.63*
BUCKLING OF CRACK EDGES NOT RESTRAINED												
T6351	P	1.00	R.T.	L-T	47.2	20.000	1.023	2.610	---	---	40.10	82.06*
		1.00			47.2	20.000	1.023	7.000	---	---	29.70	106.66*
		1.00			47.2	20.000	1.023	4.880	---	---	34.50	99.18*
T6351	P	1.00	R.T.	T-L	46.5	20.000	1.023	7.000	---	---	28.00	100.55*
		1.00			46.5	20.000	1.023	2.610	---	---	38.10	77.96*
		1.00			46.5	20.000	1.023	4.850	---	---	32.60	93.39*

\*NOTE- NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STD. DEV.

TABLE 8.2.3.1

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.2.3.1 INDICATING EFFECT  
OF STRESS RATIO

MATERIAL: ALUMINUM 7005  
CONDITION: T6  
ENVIRONMENT: R T., LAB AIR

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		R=+0.05			
DELTA K MIN	A:	6.18	1.78		
	B:				
	C:				
	D:				
		7.00	2.69		
		8.00	3.95		
		9.00	5.31		
		10.00	6.74		
		13.00	11.5		
		16.00	17.4		
DELTA K MAX		20.00	28.5		
		25.00	52.4		
	A:	26.14	60.3		
	B:				
	C:				
	D:				

ROOT MEAN SQUARE 12.16  
PERCENT ERROR

LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25 4  
SUMMARY 1.25-2.0  
(NP/NA) >2.0

CONDITION/HT: T6  
 FORM: 0.16" TH SHEET  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T  
 FREQUENCY: 2.00  
 ENVIRONMENT: R.T., LAB AIR

YIELD STRENGTH: 49.0 KSI  
 ULT. STRENGTH:  
 SPECIMEN THK: 0.100- 0.162"  
 SPECIMEN WIDTH: 3.000- 14.040"  
 REFERENCES 86734

ALUM.  
 ALLOY

7005

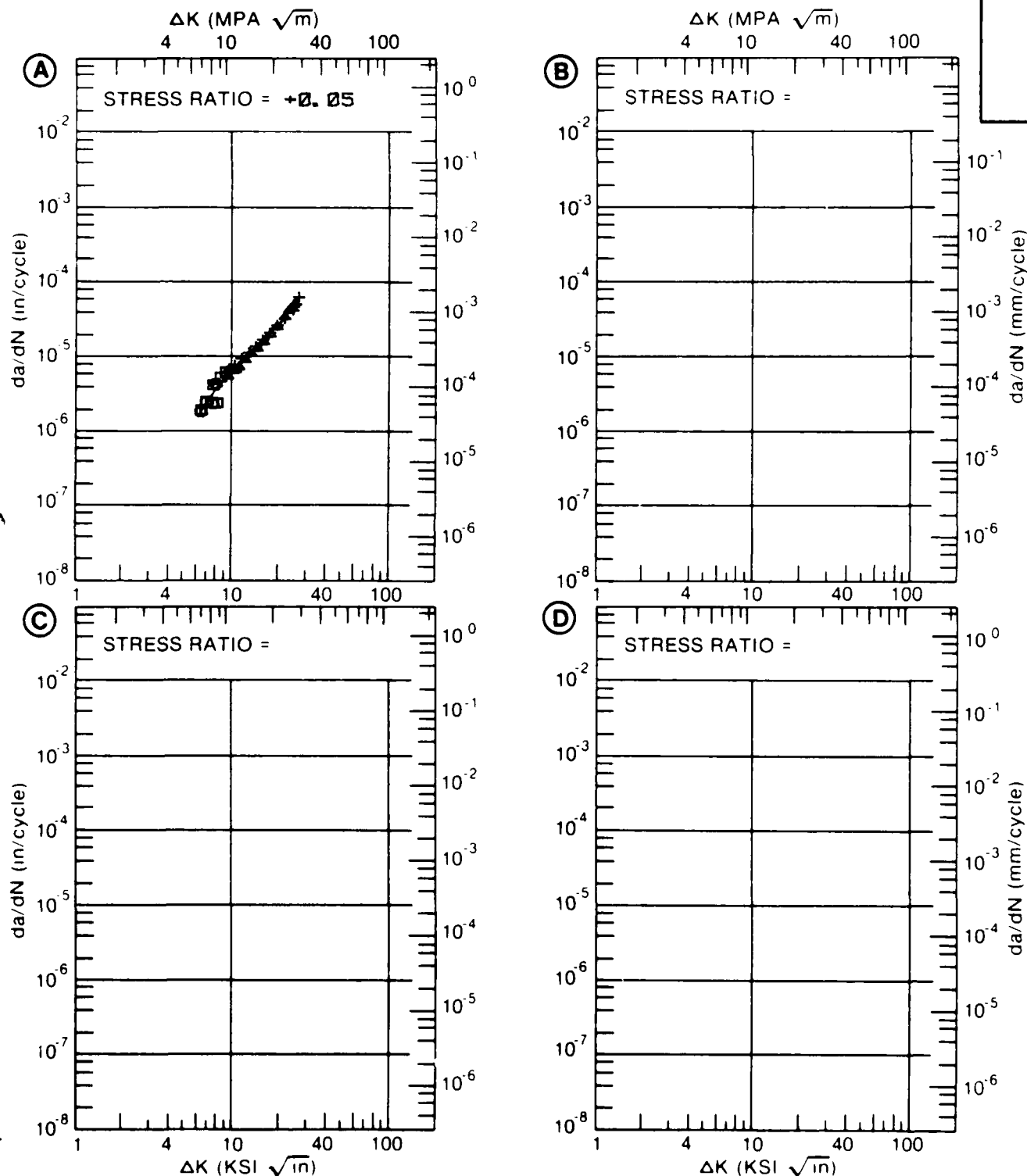


Figure 8.2.3.1

TABLE 8.2.3.2

CONDITION	--PRODUCT--		TEST TEMP (F)	SPEC OR STR	YIELD (KSI)	ALUMINUM		7005		K(I5CC)		STAN DEV	TEST TIME (MIN)	DATE REFER
	FORM	THICK (IN)				WIDTH (IN)	THICK (IN)	DESIGN (*SG)	LENGTH (IN)	K(I5CC)	MEAN (KSI*SG IN)			
163	P	1 00	R T	S-L	46 0	3 5	PCT NACL	4 000	1 000	DCB	----	42 00	28 00	1968 84331



TABLE 8.3.3.1

CONDITION	ALUMINUM			7007		K (ISCC)		CRACK LENGTH K (G) (IN) (KSI*SGRT IN)	MEAN DEV	STAN DEV	TEST TIME (MIN)	DATE REFER
	--PRODUCT-- FORM THICK (IN)	TEST SPEC YIELD OR STR ENVIRONMENT (KSI)	WELD CENTER LINE	SPECIMEN--		WIDTH (IN)	THICK (IN)					
				W	B							
T6 OVERHEATED P WELD CENTER LINE	1 00	R T S-L	37 2 3 5 PCT NACL	2 500	1 000 WDL	----	----	35 00	> 11 00		4320	1970 80073
T6 REPAIRED P WELD FUSION LINE	1 00	R T S-L	---- 3 5 PCT NACL	2 500	1 000 WDL	----	----	41 00	8 70	>	4320	1970 80073
T6 REPAIRED P WELD HEAT AFF ZONE	1 00	R T S-L	---- 3 5 PCT NACL	2 500	1 000 WDL	----	----	42 00	16 30	>	4320	1970 80073
T6 REPAIRED P WELD CENTER LINE	1 00	R T S-L	---- 3 5 PCT NACL	2 500	1 000 WDL	----	----	27 00	10 60	>	4320	1970 80073
T6 WELD CENTER P LINE	1 00	R T S-L	39 9 3 5 PCT NACL	2 500	1 000 WDL	----	----	42 00	< 12 00	>	4320	1970 80073
T6 WELD FUSION P LINE	1 00	R T S-L	39 9 3 5 PCT NACL	2 500	1 000 WDL	----	----	42 00	< 11 00		4320	1970 80073
T6 WELD HEAT P AFF ZONE	1 00	R T S-L	40 4 3 5 PCT NACL	2 500	1 000 WDL	----	----	40 00	> 15 00	>	4200	1970 80073

TABLE 8.4.1.1

MEAN PLANE STRAIN FRACTURE TOUGHNESS DATA OF  
ALUMINUM ALLOY 7010 AT ROOM TEMPERATURE

CONDITION HT	MEAN K <sub>IC</sub> ± STANDARD (KSI √IN) ± DEVIATION		(NUMBER OF SPECIMENS)	
	PLATE			
	I-I	I-I	S-L	
T/1651	37.5 ± 4.6 (4)	27.9 ± 2.8 (5)	23.1 ± 0.5 (2)	

TABLE 8.4.1.2

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR

ALUMINUM 7010

## TEST CONDITIONS

SPECIMEN  
ORIENTATION TENVIRONMENT  
LAB AIR  
AT R T

CONJUNCTION HT	PRODUCT FORM	STRESS RATIO	FREQ (HZ)	DELTA K LEVELS (KSI SQRT(IN))	FATIGUE CRACK GROWTH RATES (MICRO IN/CYCLE)				
					2.5	5	10	20	50
170651	PLATE	0.10	20.00-20.00		0.25	2.83	56.5		
170651	PLATE	0.30	10.00-20.00		0.46	8.19			
170651	PLATE	0.50	10.00-20.00		1.03	11.7			
170651	PLATE	0.65	10.00-20.00		2.01	17.8			
170651	PLATE	0.80	10.00-20.00		3.25				

TABLE 8.4.2.1

CONDITION	ALUMINUM					7010		K(IIC)		DATE	REFER		
	--PRODUCT-- FORM	THICK (IN)	TEST TEMP (F)	SPECIMEN ORIENT	YIELD STRENGTH (KSI)	-----SPECIMEN-----		CRACK LENGTH (IN)	2.5* (IN)				
						WIDTH (IN)	THICK (IN)						
												W	B
								A					
T73651	P	2.00	R.T.	L-T	63.2	1.500	0.750	CT	0.782	0.57	30.20	1980	BL001
		2.00			63.2	1.500	0.750	CT	0.777	0.52	28.90	1980	BL001
		2.00			64.4	3.000	1.500	CT	----	0.86	37.80	1980	UD003
		2.00			64.4	3.000	1.500	CT	----	0.83	37.10	1980	UD003
T73651	P	2.00	250	L-T	64.4	3.000	1.500	CT	----	0.94	39.40	1980	UD003
		2.00			64.4	3.000	1.500	CT	----	0.87	38.00	1980	UD003
T73651	P	2.00	R.T.	T-S	62.9	1.500	0.750	CT	----	0.58	30.30	1980	UD003
		2.00			62.9	1.500	0.750	CT	----	0.64	31.80	1980	UD003
T73651	P	2.00	R.T.	T-L	62.9	1.500	0.750	CT	----	0.56	29.90	1980	UD003
		2.00			62.9	1.500	0.750	CT	----	0.53	29.00	1980	UD003
		2.00			62.9	1.500	0.750	CT	----	0.60	30.80	1980	UD003
		2.00			63.6	1.500	0.750	CT	0.766	0.38	24.80	1980	BL001
		2.00			63.6	1.500	0.750	CT	0.786	0.38	24.90	1980	BL001
T73651	P	2.00	250	T-L	62.9	1.500	0.750	CT	----	0.50	28.00	1980	UD003
T73651	P	2.00	R.T.	S-L	65.0	1.500	0.750	CT	----	0.30	22.70	1980	UD003
		2.00			65.0	1.500	0.750	CT	----	0.32	23.40	1980	UD003

TABLE 8.4.3.1

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.4.3.1 INDICATING EFFECT

OF ENVIRONMENT

MATERIAL: ALUMINUM		7010			
CONDITION: T73651					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R. 1.	E=+ 250		
		LAB AIR	AIR		
DELTA K MIN	A:	5.00	.386		
	B:	3.73	.186		
	C:				
	D:				
	4.00		.253		
	5.00		.648		
	6.00	.886	1.60		
	7.00	2.11	3.70		
	8.00	3.98	7.80		
	9.00	6.40	13.9		
	10.00	9.21	20.4		
	13.00	18.6	32.4		
	16.00	27.5	42.5		
	20.00	38.0	84.5		
DELTA K MAX	A:	31.27	94.6		
	B:	20.31	91.0		
	C:				
	D:				
ROOT MEAN SQUARE		12.77	7.88		
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25				
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION/HT: T73651  
 FORM: 2.00" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-S  
 STRESS RATIO: +0.10  
 FREQUENCY: 20.00- 25.00 HZ

YIELD STRENGTH: 64.4 KSI  
 ULT. STRENGTH: 73.7 KSI  
 SPECIMEN THK: 0.300"  
 SPECIMEN WIDTH: 1.500"  
 REFERENCES: UD003

ALUM.  
ALLOY

7010

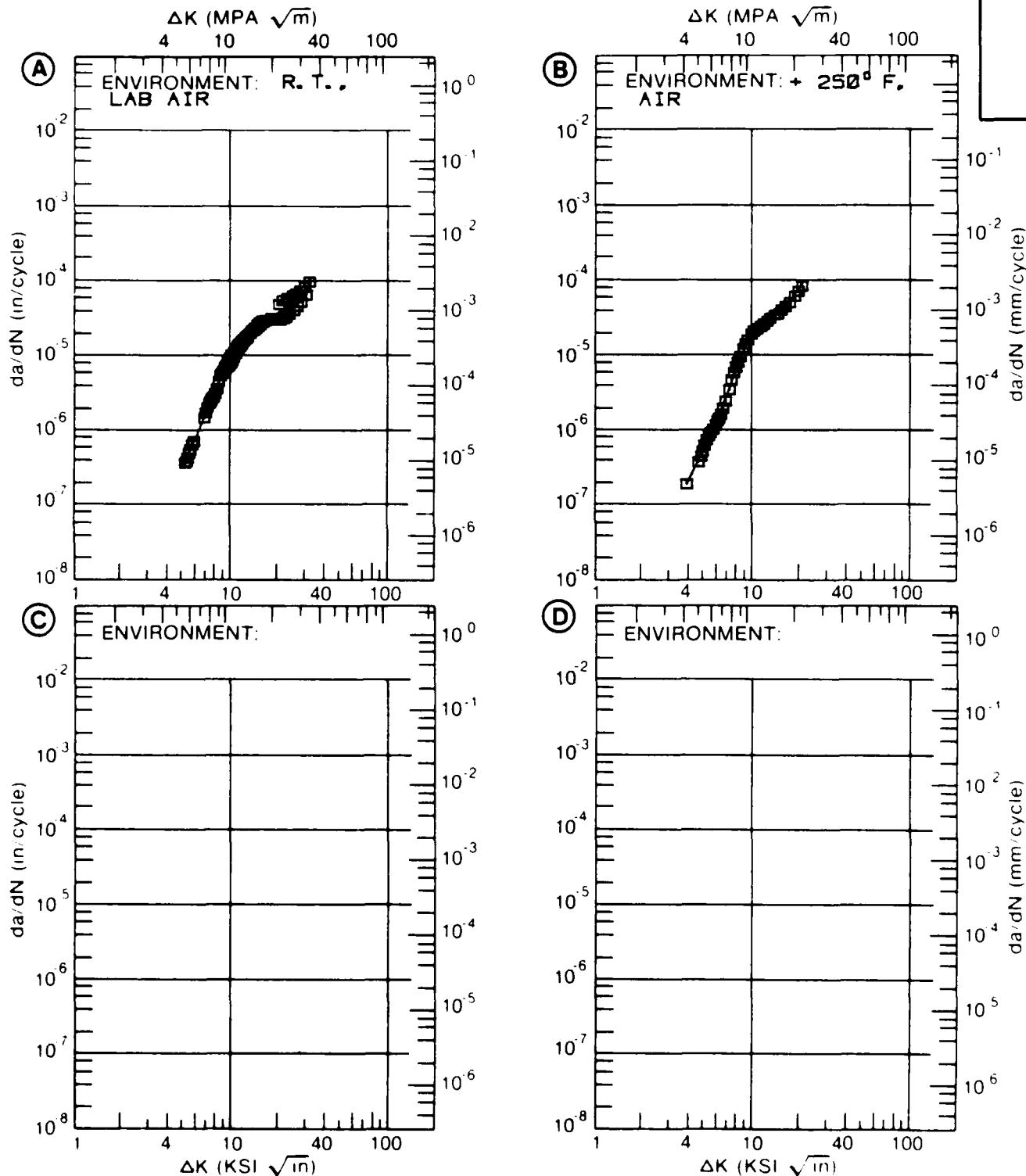


Figure 8.4.3.1

TABLE 8.4.3.2

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTORDATA ASSOCIATED WITH FIGURE 8.4.3.2 INDICATING EFFECT  
OF STRESS RATIO

MATERIAL: ALUMINUM 7010  
 CONDITION: T73651  
 ENVIRONMENT: R.T., LAB AIR

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A R=+0.30	B R=+0.50	C R=+0.65	D R=+0.80
DELTA K MIN	A: 3.39	185			
	B: 2.70		141		
	C: 3.52			430	
	D: 2.70				167
	3.00		202		357
	3.50	192	259		864
	4.00	240	338	539	155
	5.00	463	103	201	325
	6.00	108	276	429	569
	7.00	235	486	614	103
DELTA K MAX	8.00	416	695	853	138
	9.00	611	911	121	
	10.00	819	117	178	
	13.00	184	277		
	16.00	401			
	A: 16.00	401			
	B: 14.67		519		
	C: 12.66			585	
	D: 8.00				138
ROOT MEAN SQUARE		13.51	20.48	18.00	21.76
PERCENT ERROR					

LIFE 0.0-0.5  
 PREDICTION 0.5-0.8  
 RATIO 0.8-1.25  
 SUMMARY 1.25-2.0  
 (NP/NA) >2.0

CONDITION/HT: T73651  
 FORM: 2.00" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 FREQUENCY: 10.00- 20.00 HZ  
 ENVIRONMENT: R. T., LAB AIR

YIELD STRENGTH 64.4 KSI  
 ULT STRENGTH 73.7 KSI  
 SPECIMEN THK 0.200"  
 SPECIMEN WIDTH 1.400"  
 REFERENCES: UD002

ALUM.  
 ALLOY

7010

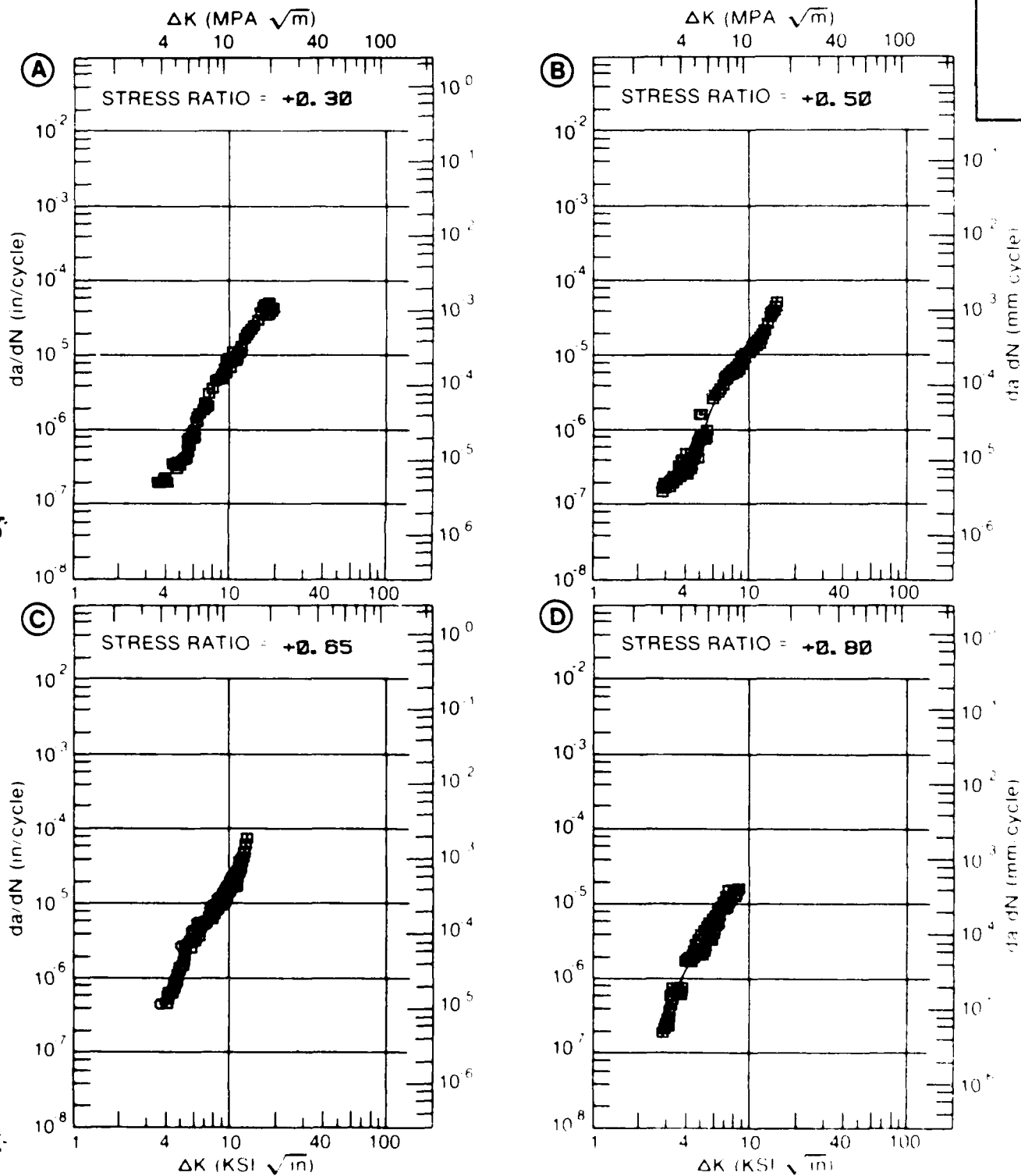


Figure 8.4.3.2



TABLE 8.4.3.3

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.4.3.3 INDICATING EFFECT

## OF ENVIRONMENT

MATERIAL: ALUMINUM 7010  
CONDITION: T73651

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R.T. LAB AIR	E=+ 250F AIR	E=+ 350F AIR	
DELTA K	A: 4.53	243			
B: 3.59			184		
MIN C: 2.80				162	
D:					
	3.00			301	
	3.50			449	
	4.00		531	725	
	5.00	250	943	1.80	
	6.00	668	2.13	3.60	
	7.00	998	4.29	6.20	
	8.00	1.33	7.12	9.98	
	9.00	1.91	10.5	15.6	
	10.00	2.83	14.9	24.1	
	13.00	9.07	37.9		
	16.00	23.5			
	20.00	56.5			
DELTA K	A: 23.58	88.6			
B: 14.35			52.8		
MAX C: 10.67				32.2	
D:					
ROOT MEAN SQUARE		19.41	16.45	2.53	
PERCENT ERROR					

LIFE 0.0-0.3  
 PREDICTION 0.5-0.8  
 RATIO 0.8-1.25  
 SUMMARY 1.25-2.0  
 (NP/NA) >2.0

CONDITION/HT: T73651  
 FORM: 2.00" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 STRESS RATIO: +0.10  
 FREQUENCY: 20.00- 25.00 HZ

YIELD STRENGTH: 64.4 KSI  
 ULT. STRENGTH: 73.7 KSI  
 SPECIMEN THK: 0.300"  
 SPECIMEN WIDTH: 1.500"  
 REFERENCES: UD002, UD003

ALUM.  
 ALLOY

7010

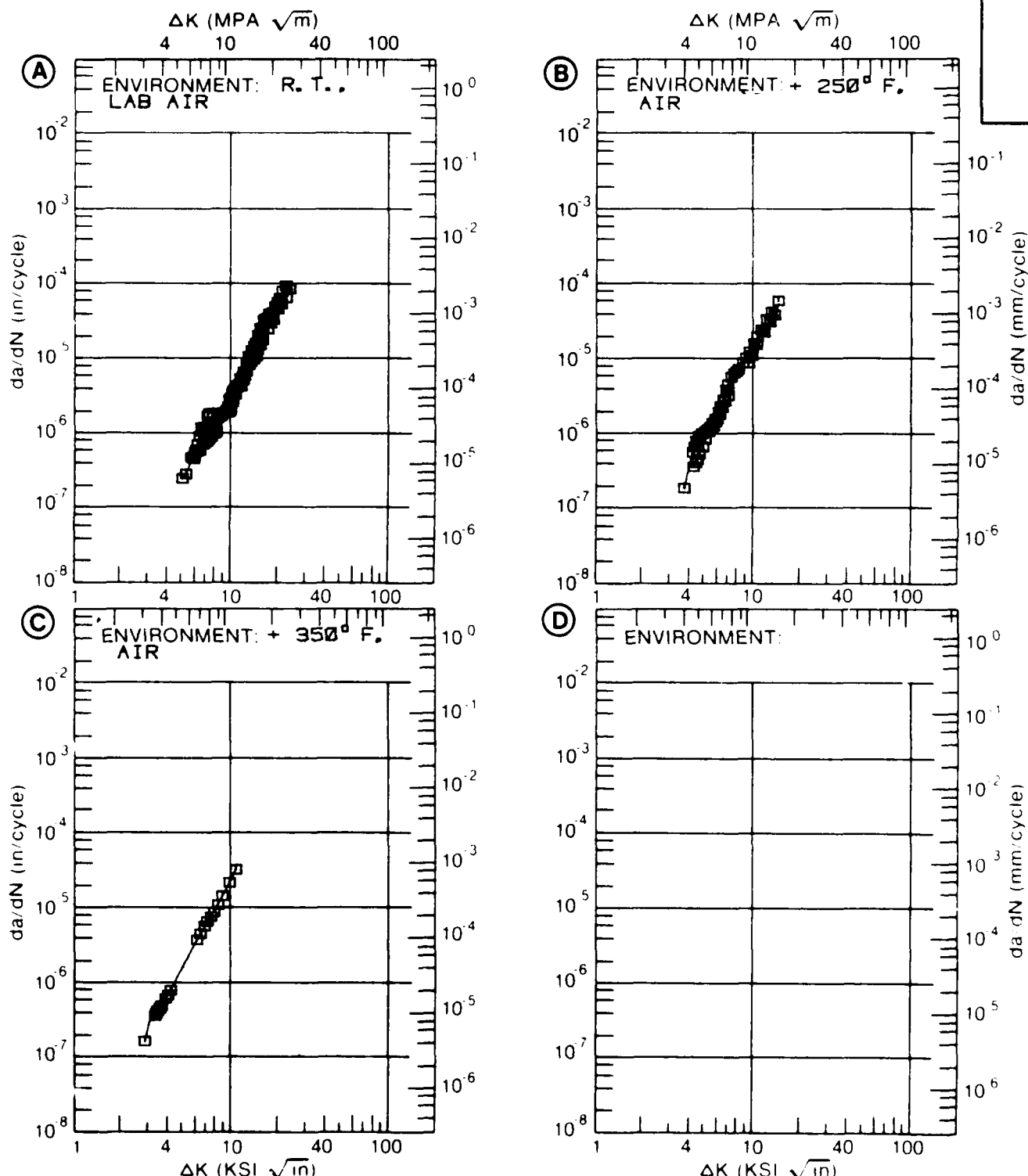


Figure 8.4.3.3

TABLE 8.4.3.4

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.4.3.4 INDICATING EFFECT

OF ENVIRONMENT

MATERIAL: ALUMINUM 7010  
CONDITION: T736S1

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R 1 LAB AIR	E=+ 250F AIR		
DELTA K MIN	A:	5.43	.588		
	B:	5.75	3.45		
	C:				
	D:				
	6.00 :	.760	3.99		
	7.00 :	1.69	6.39		
	8.00 :	3.28	9.10		
	9.00 :	4.80	12.2		
	10.00 :	6.03	15.7		
	13.00 :	9.10	31.1		
DELTA K MAX	16.00 :	13.0			
	20.00 :	22.5			
	A:	24.31	46.1		
	B:	15.48	54.5		
	C:				
	D:				
ROOT MEAN SQUARE		9.39	4.95		
PERCENT ERROR					

LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25  
SUMMARY 1.25-2.0  
(NP/NA) 2.0

CONDITION/HT: T73651  
 FORM: 2.00" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: T-S  
 STRESS RATIO: +0.10  
 FREQUENCY: 20.00- 25.00 HZ

YIELD STRENGTH: 62.9 KSI  
 ULT. STRENGTH: 73.7 KSI  
 SPECIMEN THK: 0.300"  
 SPECIMEN WIDTH: 1.500"  
 REFERENCES: UD003

ALUM.  
 ALLOY

7010

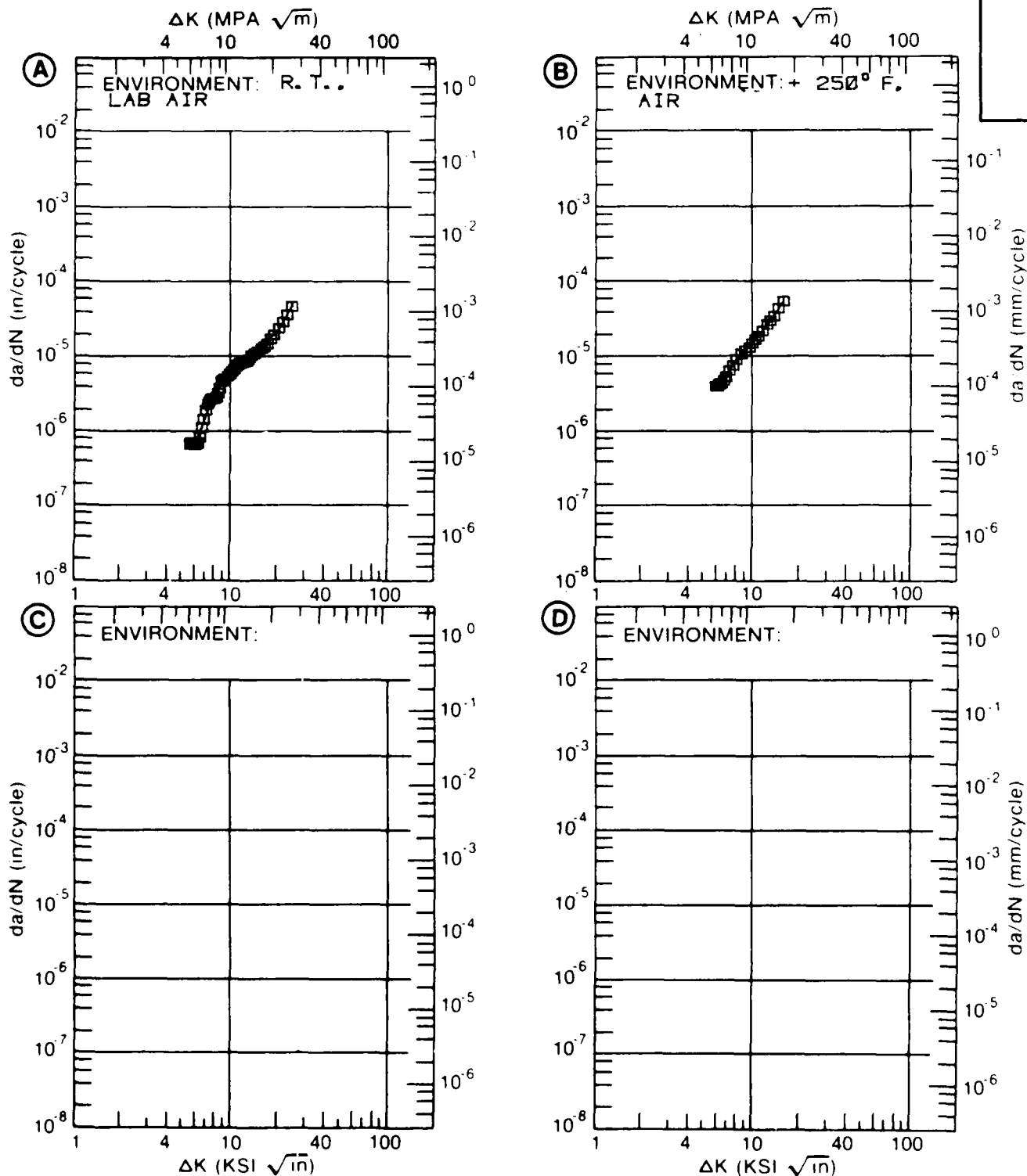


Figure 8.4.3.4

TABLE 8.4.3.5

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.4.3.5 INDICATING EFFECT  
OF ENVIRONMENT

MATERIAL: ALUMINUM 7010  
CONDITION: T73651

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R.T. LAB AIR		E=+ 250 AIR	
DELTA K MIN	A:	5.31	420		
	B:	3.83	259		
	C:				
	D:				
	4.00		330		
	5.00		1.01		
	6.00	540	2.24		
	7.00	831	4.13		
	8.00	1.49	6.81		
	9.00	3.13	10.4		
	10.00	6.15	15.3		
	13.00	15.8	40.7		
	16.00	34.3			
	20.00	85.4			
DELTA K MAX	A:	20.03	85.9		
	B:	14.89	70.6		
	C:				
	D:				
ROOT MEAN SQUARE		15.05	22.86		
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25				
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION HT T73651  
 FORM 2.00" TH PLATE  
 SPECIMEN TYPE CT  
 ORIENTATION T-L  
 STRESS RATIO +0.10  
 FREQUENCY 20.00- 25.00 HZ

YIELD STRENGTH: 62.9 KSI  
 ULT. STRENGTH: 73.7 KSI  
 SPECIMEN THK: 0.300"  
 SPECIMEN WIDTH: 1.500"  
 REFERENCES: UD003

ALUM.  
ALLOY

7010

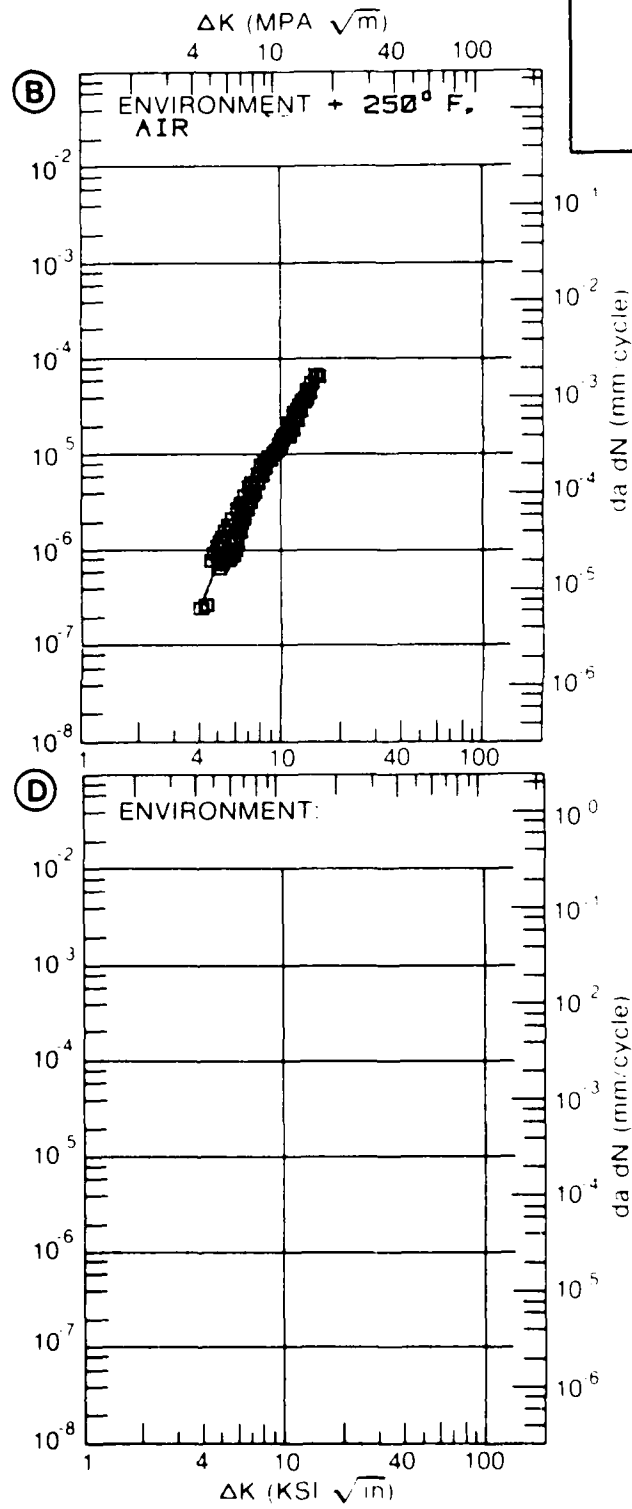
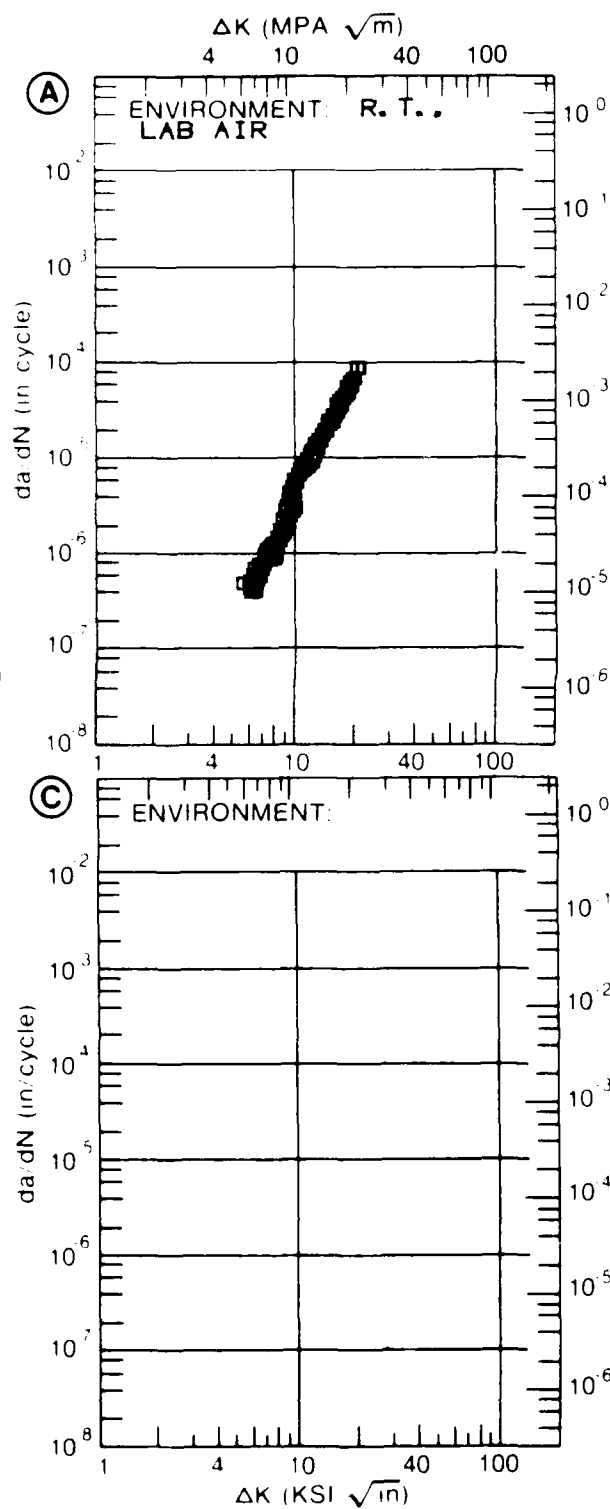


Figure 8.4.3.5

TABLE 8.4.3.6

[illegible]

TABLE 8.5.3.1

SUSTAINED CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTORDATA ASSOCIATED WITH FIGURE 8.5.3.1 INDICATING EFFECT  
OF ENVIRONMENT

---

MATERIAL: ALUMINUM 7039  
CONDITION T64

---

K MAX  
(KSI\*IN\*\*1/2)DA/DT (10\*\*<sup>-6</sup> IN/HOUR)

A

B

C

D

E=  
WET 3X/DAY WITH  
3.5% NaCl

K MAX MIN	A:	8.00	857.
	B:		
	C:		
	D:		

	9.00	1319.
	10.00	1834.
	13.00	3401.
	15.00	4682.
	20.00	5828.
	25.00	6641.
	30.00	7125.
	35.00	7506.
	40.00	7898.

K MAX MAX	A:	43.00	8165.
	B:		
	C:		
	D:		

---

ROOT MEAN SQUARE 7.74  
PERCENT ERROR

---



CONDITION/HT: T64  
 FORM: 1.0" TH PLATE  
 SPECIMEN TYPE: DCB  
 ORIENTATION: S-L  
 YIELD STRENGTH:  
 ULT. STRENGTH:

SPECIMEN THK: 1.000"  
 SPECIMEN WIDTH: 5.000"  
 CRACK LENGTH ( $A_0$ ):  
 $K_{ISCC}$ :  
 REFERENCES: 84284

ALUM.  
 ALLOY

7039

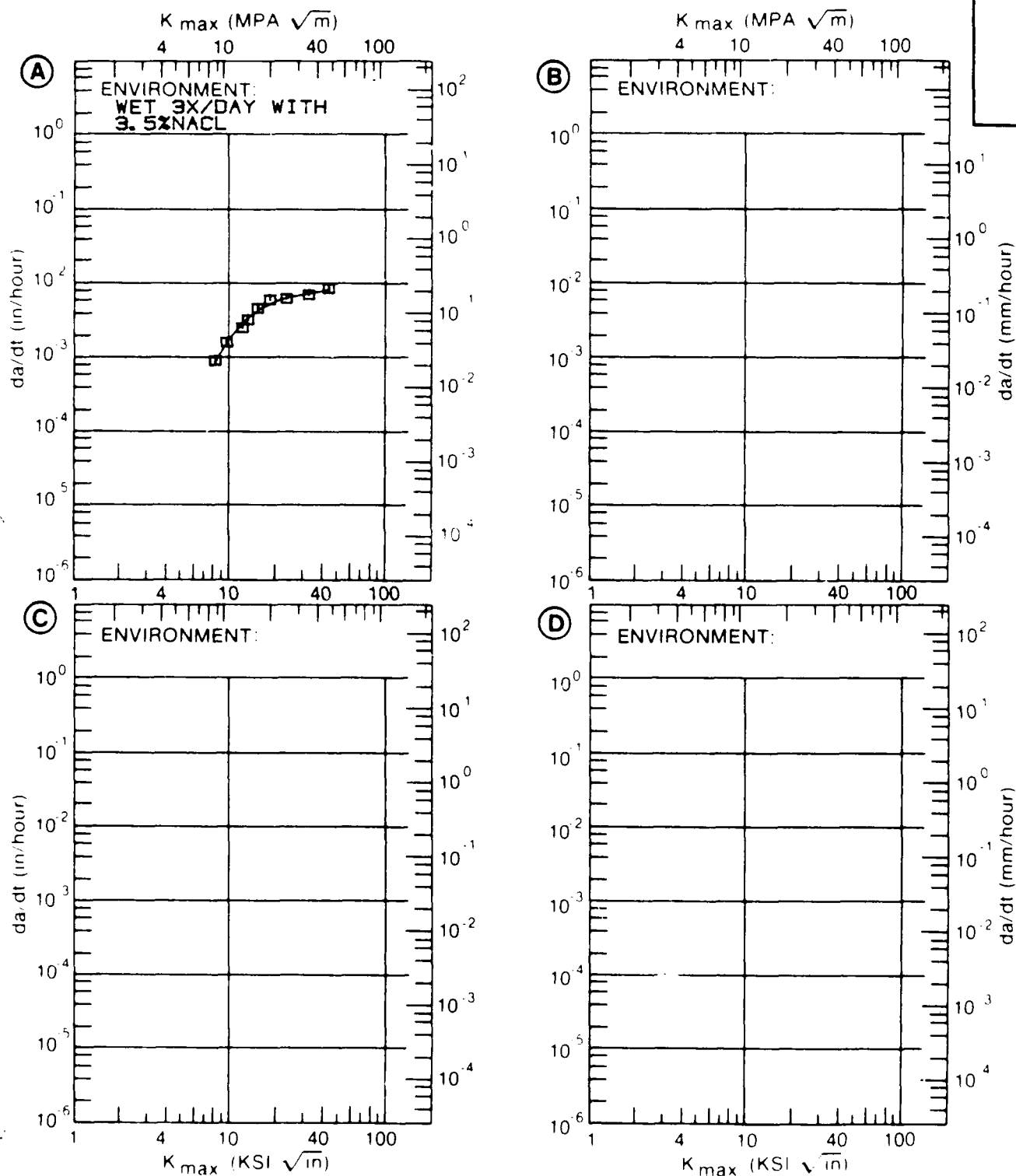


Figure 8.5.3.1

TABLE 8.6.1.1

MEAN PLANE STRAIN FRACTURE TOUGHNESS DATA OF  
ALUMINUM ALLOY 7049 AT ROOM TEMPERATURE

CONDITION/HT	MEAN K <sub>IC</sub> ± STANDARD (KSI SQRT(IN))	DEVIATION	(NUMBER OF SPECIMENS)
PLATE			
CONDITION/HT	I-L	I-L	S-L
T/351	---	26.1 ± 1.7 (4)	23.8 ± 0.6 (4)
FORGING			
CONDITION/HT	I-L	T-L	S-L
T/3	30.8 ± 3.0 (29)	21.9 ± 2.5 (20)	21.3 ± 2.5 (39)
T/352	38.2 ± 1.0 (2)	----	19.5 ± 2.8 (6)
EXTRUSION			
CONDITION/HT	I-L	I-L	S-L
T/3	28.1 ± 0.7 (3)	25.2 ± 0.5 (3)	----
EXTRUDED BAR			
CONDITION/HT	I-L	I-L	S-L
T/3	31.2 ± 2.7 (3)	22.0 ± 0.5 (3)	----
T/3511-HIGH/ PURITY	33.9 ± 0.1 (2)	26.0 ± 0.1 (2)	----
T/3511 LOW/ PURITY	27.8 ± 0.3 (2)	10.1 ± 0.1 (2)	----
T/3511 MEDIUM/ PURITY	29.7 ± 0.8 (2)	27.1 ± 0.5 (2)	----
T/3	32.7 ± 1.7 (3)	20.0 ± 0.3 (3)	----

TABLE 8.6.1.2

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR

ALUMINUM 7049

## TEST CONDITIONS

SPECIMEN  
ORIENTATIONENVIRONMENT  
L H A  
A T R T

CONDITION, R <sub>1</sub>	PRODUCT FORM	STRESS RATIO	FREQ (Hz)	DELTA K LEVELS (KSI SQRT(IN))	FATIGUE CRACK GROWTH RATES (MICRO IN/CYCLE)				
				2	5	10	20	50	100
T7351	PLATE	-1.00	10.00			3.59	43.9		
T7351	PLATE	0.00	10.00			2.58	28.3		
T7351	PLATE	0.50	10.00			0.76	14.6	108	
T7351	FORGING	0.00	6.00			4.16	33.1		
T7351	FORGING	0.00	6.00			0.66	5.63		
T7351	FORGING	0.40	6.00		0.06	1.03	11.0		
T7351	FORGING	0.50	6.00		0.11	1.29			

TABLE 8.6.1.3

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR

ALUMINUM 7049

TEST CONDITIONS

SPECIMEN ORIENTATION	L T	ENVIRONMENT		LAB AIR	
		AT R T		AT R T	
CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQ (HZ)	DELTA K LEVELS (KSI SQRT(IN))	FATIGUE CRACK GROWTH RATES (MICRO IN/CYCLE)
				2 5	5
				10	20
				50	100
T73511-HIGH PURITY	EXTRUSION	0 10	30 00		7 84
T73511-LOW PURITY	EXTRUSION	0 10	30 00		7 32
T73511-MEDIUM PURITY	EXTRUSION	0 10	30 00		3 44

TABLE 8.6.1.4

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR

ALUMINUM 7049

TEST CONDITIONS

SPECIMEN ORIENTATION

ENVIRONMENT H H A  
AT R T

CONDITIONS	PRODUCT FORM	STRESS RATIO	FREQ (HZ)	DELTA K LEVELS (KSI SQRT(IN))	FATIGUE CRACK GROWTH RATES (MICRO IN/CYCLE)				
				2 5	5	10	20	50	100
773	FORGING	0.33	5.20						15.5
73511 HIGH PURITY	EXTRUSION	0.10	30.00						15.4
73511 LOW PURITY	EXTRUSION	0.10	30.00						11.5
73511 MEDIUM PURITY	EXTRUSION	0.10	30.00						14.2

TABLE 8.6.1.5

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR

ALUMINUM 7049

## TEST CONDITIONS

SPECIMEN  
ORIENTATIONENVIRONMENT 3.5% NaCl  
A R T

CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQ (HZ)	DELTA K LEVELS (KSI SQRT(IN))	2	5	10	20	50	100
T7351	PLATE	0.00	1.00				56.1	224	2157	
T7351	PLATE	0.00	10.00				25.1	125	928	
T7351	PLATE	1.00	0.10				20.7	96.5		
T7351	PLATE	0.50	0.10				4.30	48.8	228	

TABLE 8.6.1.6

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR  
ALUMINUM 7049

TEST CONDITIONSSPECIMEN  
ORIENTATION T-LENVIRONMENT LAB AIR  
AT R T

CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQ (HZ)	DELTA K LEVELS (KSI SQRT(IN))	2	5	10	20	50	100
<hr/>										
T73511-HIGH PURITY	EXTRUSION	0.10	30.00				7.81			
<hr/>										
T73511-LOW PURITY	EXTRUSION	0.10	30.00				9.33			
<hr/>										
T73511-MEDIUM PURITY	EXTRUSION	0.10	30.00				8.36			

TABLE 8.6.1.7

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR

ALUMINUM 7049

TEST CONDITIONS

TEST MEMBER  
ORIENTATION T L

ENVIRONMENT SALT FOG  
AT R I

CONDITION/HI	PREVIOUS FORM	STRESS RATIO	FREQ (HZ)	DELTA K LEVELS (KSI SQRT(IN))	FATIGUE CRACK GROWTH RATES (MICRO IN./CYCLE)
				2 5	5 10 20 50 100

T T FORGING 0 33 18 30 30 1

T T FORGING 0 33 5 20 34 2



TABLE 8.6.2.1

CONDITION	ALUMINUM				YIELD STRENGTH (KSI)	7049			K(1C)		K(1C) STAN DEV (IN)	K(1C) MEAN DEV (KSI*SQRT IN)	DATE	REFER	
	--PRODUCT-- FORM	THICK (IN)	TEST TEMP (F)	SPECIMEN ORIENT		-----SPECIMEN-----		CRACK LENGTH (IN)							
						WIDTH (IN)	THICK (IN)		A	B					
173	F	2 00	R T	L-S	73.1	1.500	0.750	CT	0.780	0.53		33.60		1972	84368
173	F	1 00	B6	L-S	74.9	2.000	0.998	CT	1.059	0.36		28.50		1973	86213
173	F	6 00	R T	L-T	55.3	2.000	0.998	CT	1.003	0.64		28.00		1973	86213
		6 00			55.3	2.000	0.998	CT	0.971	0.54		25.60		1973	86213
		6 00			58.4	2.000	1.002	CT	0.993	0.90		35.10		1973	86213
		6 00			58.4	2.000	1.001	CT	1.021	0.76		32.30		1973	86213
		5 00			60.1	2.000	1.000	CT	1.060	0.52		27.40		1972	84368
		5 00			60.1	2.000	1.000	CT	1.040	0.47		25.90		1972	84368
		3 00			65.0	2.000	1.000	CT	1.011	0.56		30.70		1973	86213
		3 00			65.0	2.000	1.000	CT	1.042	0.67		33.70		1973	86213
		3 00			65.4	2.000	1.000	CT	1.100	0.57		31.40		1972	84368
		3 00			65.4	2.000	0.998	CT	1.088	0.54		30.30		1973	86213
		3 00			65.4	2.000	1.000	CT	1.090	0.54		30.30		1972	84368
		3 00			65.4	2.000	0.998	CT	1.097	0.58		31.40		1973	86213
		2 00			65.5	1.500	0.750	CT	0.790	0.69		34.30		1972	84368
		2 00			65.5	1.500	0.750	CT	0.800	0.64		33.20		1972	84368
		2 00			67.0	1.000	0.500	CT	0.480	0.46		28.70		1972	84368
		1 00			67.0	1.000	0.500	CT	0.470	0.45		28.30		1972	84368
		1 75			67.0	1.000	0.498	CT	0.472	0.45		28.30		1973	86213
		1 75			67.0	1.000	0.498	CT	0.480	0.46		28.70		1973	86213
		-----			68.0	3.500	0.996	CT	1.802	0.43		28.20		1972	84306
		2 00			68.8	2.000	1.000	CT	1.036	0.42		28.30		1973	86213
		7 10			70.6	2.000	0.998	CT	1.049	0.40		28.20		1973	86213
		4 00			72.8	2.000	1.000	CT	1.080	0.55		34.20		1972	84368
		4 00			72.8	1.990	0.998	CT	1.084	0.55		34.20		1973	86213
		4 00			72.8	1.990	0.998	CT	1.090	0.47		31.50		1973	86213
		4 00			72.8	2.000	1.000	CT	1.090	0.47		31.50		1972	84368
		7 00			73.4	2.000	1.000	CT	1.095	0.58		35.40		1973	86213
		2 00			74.4	1.000	0.500	CT	0.490	0.43		30.80		1972	84368
		1 00			74.4	1.000	0.500	CT	0.480	0.42		30.60		1972	84368
		2 00			75.9	1.500	0.750	CT	0.830	0.60		37.20	30.8/ 3 0	1972	84368
173	F	5 00	B2	L-T	60.1	2.000	1.000	CT	1.039	0.46		25.90		1973	86213
		5 00			60.1	2.000	1.000	CT	1.062	0.52		27.40		1973	86213
		5 00			60.6	1.990	1.000	CT	0.995	0.80		34.30		1973	86213
		2 70			65.5	1.500	0.747	CT	0.795	0.69		34.30		1973	86213
		2 70			65.5	1.500	0.747	CT	0.802	0.64		33.20		1973	86213

TABLE 8.6.2.1 (Con't)

CONDITION	ALUMINUM				YIELD STRENGTH (KSI)	7049			K(1C)		K(1C) STAN DEV	DATE	REFER	
	---PRODUCT---		TEST SPECIMEN ORIENT	THICK (IN)		-----SPECIMEN-----		CRACK LENGTH (IN)	2.5* (IN)					
	FORM	THICK (IN)				WIDTH (IN)	THICK (IN)			DESIGN				
T73	F	4 20	82	L-T	65.7	1.500	0.748	CT	0.785	0.49	29 20	1973 86213		
		4 20			65.7	1.500	0.748	CT	0.793	0.49	29 10	1973 86213		
		2 00			68.8	2.000	1.000	CT	1.081	0.29	23 50	1973 86213		
		2 50			73.1	1.500	0.749	CT	0.782	0.53	33 60	1973 86213		
		1 50			74.4	0.990	0.499	CT	0.491	0.43	30 80	1973 86213		
		1 50			74.4	1.000	0.499	CT	0.481	0.42	30 60	1973 86213		
	2 50			75.9	1.500	0.750	CT	0.832	0.60	37 20	30.8/	4.0	1973 86213	
T73	F	6 00	84	L-T	59.5	2.000	1.000	CT	1.010	0.66	30 60	1973 86213		
		6 00			59.5	2.000	1.000	CT	1.015	0.79	33 50	32.1/	2.1	1973 86213
T73	F	6 00	R T	T-L	55.5	2.000	1.000	CT	0.967	0.29	18 90	1973 86213		
		6 00			55.5	2.000	1.000	CT	0.994	0.29	18 80	1973 86213		
		6 00			57.8	2.000	1.001	CT	1.023	0.44	24 20	1973 86213		
		6 00			57.8	2.000	1.002	CT	1.016	0.40	23 00	1973 86213		
		5 00			58.1	2.000	1.000	CT	1.050	0.25	18 40	1972 84368		
		3 00			62.2	2.000	1.000	CT	1.027	0.50	27 90	1973 86213		
		3 00			62.2	2.000	1.000	CT	1.023	0.44	26 20	1973 86213		
		3 00			63.9	2.000	1.000	CT	0.997	0.28	21 20	1973 86213		
		3 00			63.9	2.000	0.999	CT	1.085	0.25	20 40	1973 86213		
		3 00			66.2	2.000	1.000	CT	1.100	0.31	23 40	1972 84368		
		3 00			66.2	1.990	0.998	CT	1.101	0.31	23 40	1973 86213		
		3 00			66.2	2.000	0.998	CT	1.106	0.30	23 00	1973 86213		
		3 00			66.2	2.000	1.000	CT	1.110	0.30	23 00	1972 84368		
		2 00			67.0	2.000	0.999	CT	1.015	0.19	18 70	1973 86213		
		4 00			68.5	2.000	0.998	CT	1.062	0.25	21 70	1973 86213		
		4 00			68.5	2.000	1.000	CT	1.060	0.25	21 70	1972 84368		
	4 00			68.5	2.000	0.998	CT	1.091	0.22	20 20	1973 86213			
	4 00			68.5	2.000	1.000	CT	1.090	0.22	20 20	1972 84368			
	7 10			70.6	2.000	0.999	CT	1.093	0.26	22 60	1973 86213			
	7 00			73.4	2.000	0.998	CT	1.104	0.20	20 70	21.9/	2.5	1973 86213	
T73	F	5 00	82	T-L	58.1	2.000	1.000	CT	1.047	0.25	18 40	1973 86213		
		5 00			61.3	1.990	1.000	CT	0.950	0.52	28 00	1973 86213		
		5 00			61.3	1.990	1.000	CT	0.945	0.49	27 10	1973 86213		
		2 00			67.0	2.000	0.999	CT	1.075	0.27	21 90	1973 86213		
	2 00			67.0	2.000	1.000	CT	1.082	0.27	22 00	23.5/	4.0	1973 86213	
T73	F	6 00	84	T-L	57.6	2.000	1.000	CT	0.988	0.31	20 30	1973 86213		

TABLE 8.6.2.1 (Con't)

CONDITION	ALUMINUM														
	7049				K(1C)										
	---PRODUCT---	THICK (IN)	TESI TEMP (F)	SPECIMEN ORIENT	YIELD (KSI)	WIDTH (IN)	THICK (IN)	DESIGN	CRACK LENGTH (IN)	2.5* (K(1C)/TVS)**2 (IN)	K(1C) MEAN (KSI*SQRT IN)	STAN DEV	DATE	REFER	
173	F	6 00	84	T-L	97.6	2 000	1 000	CT	1 013	0.36	22 00	21.2/	1.2	1973	86213
173	F	6 00	R T	S-L	55.1	2 000	0.999	CT	1 021	0.22	16.30			1973	86213
					95.1	2 000	1 000	CT	1 025	0.22	16.20		1973	86213	
					56.9	2 000	1 000	CT	1 043	0.40	22.70		1973	86213	
					56.9	2 000	1 000	CT	1 035	0.36	21.70		1973	86213	
					59.1	2 000	1 000	CT	1 050	0.28	19.70		1972	84368	
					59.1	2 000	1 000	CT	1 050	0.28	19.80		1972	84368	
					59.8	2 000	1 001	CT	1 008	0.20	17.10		1973	86213	
					61.8	1 000	0.500	CT	0.500	0.37	24.00		1972	84368	
					61.8	1 000	0.500	CT	0.510	0.36	23.70		1972	84368	
					62.3	2 000	1 000	CT	1 060	0.33	22.70		1972	84368	
					62.3	2 000	1 000	CT	1 060	0.32	22.30		1972	84368	
					62.3	2 000	0.996	CT	1 065	0.33	22.70		1973	86213	
					62.3	2 000	0.998	CT	1 059	0.32	22.30		1973	86213	
					64.5	2 000	1 000	CT	1 065	0.31	22.80		1973	86213	
					64.5	2 000	0.999	CT	1 062	0.36	24.60		1973	86213	
					64.7	1 500	0.750	CT	0.770	0.32	23.00		1972	84368	
					64.7	1 500	0.750	CT	0.770	0.41	26.20		1972	84368	
					64.9	1 500	0.750	CT	0.820	0.38	25.40		1972	84368	
					64.9	1 500	0.750	CT	0.810	0.37	25.10		1972	84368	
					65.4	2 000	0.999	CT	1 052	0.14	15.60		1973	86213	
					65.4	2 000	0.998	CT	1 089	0.18	17.60		1973	86213	
					66.1	1 000	0.498	CT	0.486	0.21	19.10		1973	86213	
					66.1	1 000	0.500	CT	0.520	0.22	19.60		1972	84368	
					66.1	1 000	0.500	CT	0.490	0.21	19.10		1972	84368	
					66.1	1 000	0.498	CT	0.520	0.22	19.60		1973	86213	
					66.3	1 500	0.750	CT	0.790	0.27	22.40		1972	84368	
					66.3	1 500	0.750	CT	0.790	0.26	21.80		1972	84368	
67.1	1 000	0.500	CT	0.460	0.31	23.50		1972	84368						
67.1	1 000	0.500	CT	0.480	0.27	21.90		1972	84368						
67.5	2 000	1 000	CT	1 060	0.24	20.80		1972	84368						
67.5	2 000	1 000	CT	1 050	0.24	20.70		1972	84368						
67.5	2 000	0.998	CT	1 058	0.24	20.80		1973	86213						
67.5	2 000	0.998	CT	1 054	0.24	20.70		1973	86213						
1 00	1 00	67.6	1 500	0.750	CT	0.800	0.29	23.10	1972	84368					
2 00	2 00	67.6	1 500	0.750	CT	0.800	0.30	23.40	1972	84368					
----	----	68.9	1 000	0.500	CT	0.500	0.22	20.50	1972	83242					
----	----	68.9	1 000	0.500	CT	0.500	0.22	20.50	1972	83242					

TABLE 8.6.2.1 (Con't)

CONDITION	ALUMINUM					7049		K(1C)		K(1C) STAN DEV	DATE	REFER		
	--PRODUCT-- FORM	THICK (IN)	TEST TEMP (F)	SPECIMEN ORIENT	YIELD STRENGTH (KSI)	-----SPECIMEN-----		CRACK LENGTH (IN)	2.5* (K(1C)/TYS)**2 (IN)					
						WIDTH (IN)	THICK (IN)						DESIGN	
						W	B	A						
173	F	5.00	R T	S-L	68.9	1.000	0.500	CT	0.500	0.24	21.20	21.3/	2.5	1972 83242
		5.00			68.9	1.000	0.500	CT	0.500	0.24	21.20			1972 83242
173	F	5.00	82	S-L	59.1	2.000	1.000	CT	1.051	0.28	19.80			1973 86213
		5.00			59.1	2.000	1.000	CT	1.048	0.28	19.70			1973 86213
		5.00			60.1	1.990	1.000	CT	0.956	0.23	18.20			1973 86213
		5.00			60.1	1.990	1.000	CT	0.980	0.22	17.90			1973 86213
		1.00			62.6	1.000	0.501	CT	0.513	0.36	23.70			1973 86213
		1.00			62.6	1.000	0.499	CT	0.499	0.37	24.00			1973 86213
		2.70			64.7	1.500	0.748	CT	0.774	0.32	23.00			1973 86213
		2.70			64.7	1.500	0.748	CT	0.773	0.41	26.20			1973 86213
		2.50			64.9	1.500	0.748	CT	0.820	0.38	25.40			1973 86213
		2.50			64.9	1.500	0.748	CT	0.813	0.37	25.10			1973 86213
		2.00			65.4	1.620	0.751	CT	0.779	0.13	15.00			1973 86213
		1.50			67.1	0.990	0.499	CT	0.464	0.31	23.50			1973 86213
		1.50			67.1	0.990	0.498	CT	0.480	0.27	21.90			1973 86213
		1.50			67.6	1.500	0.750	CT	0.799	0.30	23.40			1973 86213
		1.50			67.6	1.500	0.750	CT	0.798	0.29	23.10			1973 86213
		2.50			67.8	1.500	0.749	CT	0.789	0.27	22.40			1973 86213
		2.50			67.8	1.500	0.751	CT	0.794	0.26	21.80			1973 86213
		4.20			69.7	1.500	0.747	CT	0.782	0.17	18.40			1973 86213
		4.20			69.7	1.500	0.748	CT	0.794	0.18	18.70	21.6/	3.0	1973 86213
173	F	6.00	84	S-L	58.7	2.000	1.000	CT	1.028	0.28	19.60			1973 86213
		6.00			58.7	2.000	1.000	CT	1.024	0.28	19.70			1973 86213
		0.75			68.2	1.000	0.500	CT	0.515	0.29	23.20			1973 86213
		0.75			68.2	1.000	0.500	CT	0.516	0.30	23.60			1973 86213
		0.75			71.5	1.000	0.475	CT	0.535	0.22	21.30			1973 86213
		0.75			71.5	1.000	0.494	CT	0.539	0.25	22.60	21.7/	1.7	1973 86213
173	E	3.00	-	65	78.9	2.000	1.000	CT	1.000	0.22	23.60			1972 83061
		3.00			78.9	2.000	1.000	CT	1.000	0.26	25.40			1972 83061
		3.00			78.9	2.000	1.000	CT	1.000	0.26	25.20	24.7/	1.0	1972 83061
173	F	3.00	0	L-T	76.8	2.000	1.000	CT	1.000	0.25	24.50			1972 83061
		3.00			76.8	2.000	1.000	CT	1.000	0.30	26.80			1972 83061
		3.00			76.8	2.000	1.000	CT	1.000	0.29	26.30	25.9/	1.2	1972 83061
173	F	3.00	R T	L-T	74.8	2.000	1.000	CT	1.000	0.33	27.30			1972 83061

TABLE 8.6.2.1 (Con't)

CONDITION	ALUMINUM					7049					K(1C)							
	--PRODUCT-- FORM	THICK (IN)	TEST TEMP (F)	SPECIMEN ORIENT	YIELD STRENGTH (KSI)	-----SPECIMEN-----		W (IN)	THICK (IN)	DESIGN	CRACK LENGTH (IN)	2.5*		K(1C) MEAN DEV (KSI*SQRT IN)	STAN DEV	DATE	REFER	
						WIDTH (IN)	LENGTH (IN)					K(1C)/TYS**2 (IN)	(IN)					
173	F	3 00	R T	L-T	74 8	2 000	1 000	CT	1 000	CT	1 000	0 36	28 60	28 60	28 1/	0 7	1972 83061	
		3 00			74 8	2 000	1 000	CT	1 000	CT	1 000	0 36	28 30	28 30	28 1/	0 7	1972 83061	
173	F	3 00	- 65	T-L	77 5	2 000	1 000	CT	1 000	CT	1 000	0 22	22 80	22 80	23 3/	0 6	1972 83061	
		3 00			77 5	2 000	1 000	CT	1 000	CT	1 000	0 23	23 70	23 70	23 3/	0 6	1972 83061	
173	F	3 00	0	T-L	76 3	2 000	1 000	CT	1 000	CT	1 000	0 24	23 80	23 80	24 1/	0 7	1972 83061	
		3 00			76 3	2 000	1 000	CT	1 000	CT	1 000	0 27	24 90	24 90	24 1/	0 7	1972 83061	
		3 00			76 3	2 000	1 000	CT	1 000	CT	1 000	0 24	23 60	23 60	24 1/	0 7	1972 83061	
173	E	3 00	R T	T-L	75 0	2 000	1 000	CT	1 000	CT	1 000	0 29	25 70	25 70	25 2/	0 5	1972 83061	
		3 00			75 0	2 000	1 000	CT	1 000	CT	1 000	0 28	25 30	25 30	25 2/	0 5	1972 83061	
		3 00			75 0	2 000	1 000	CT	1 000	CT	1 000	0 27	24 70	24 70	25 2/	0 5	1972 83061	
173	E	3 00	- 65	S-T	72 7	-----	-----	CT	-----	CT	-----	0 21	21 10	21 10	22 2/	1 6	1972 83061	
		3 00			72 7	-----	-----	CT	-----	CT	-----	0 26	23 30	23 30	22 2/	1 6	1972 83061	
173	F	3 00	0	S-T	71 2	-----	-----	CT	-----	CT	-----	0 25	22 50	22 50	21 2/	1 9	1972 83061	
		3 00			71 2	-----	-----	CT	-----	CT	-----	0 19	19 80	19 80	21 2/	1 9	1972 83061	
173	F	3 00	R T	S-T	68 6	-----	-----	CT	-----	CT	-----	0 21	20 10	20 10	20 3/	0 2	1972 83061	
		3 00			68 6	-----	-----	CT	-----	CT	-----	0 22	20 50	20 50	20 3/	0 2	1972 83061	
		3 00			68 6	-----	-----	CT	-----	CT	-----	0 22	20 30	20 30	20 3/	0 2	1972 83061	
173	FB	3 50	- 65	L-T	71 7	2 000	1 000	CT	1 000	CT	1 000	0 52	32 60	32 60	31 4/	1 7	1972 83061	
		3 50			71 7	2 000	1 000	CT	1 000	CT	1 000	0 42	29 40	29 40	31 4/	1 7	1972 83061	
		3 50			71 7	2 000	1 000	CT	1 000	CT	1 000	0 51	32 20	32 20	31 4/	1 7	1972 83061	
173	FB	3 50	0	L-T	77 3	2 000	1 000	CT	1 000	CT	1 000	0 50	34 70	34 70	34 2/	0 5	1972 83061	
		3 50			77 3	2 000	1 000	CT	1 000	CT	1 000	0 48	33 80	33 80	34 2/	0 5	1972 83061	
		3 50			77 3	2 000	1 000	CT	1 000	CT	1 000	0 49	34 20	34 20	34 2/	0 5	1972 83061	
173	FB	3 25	R T	L-T	73 4	2 000	1 000	CT	1 000	CT	1 000	0 55	34 40	34 40	33 2/	2 7	1972 83061	
		3 50			73 4	2 000	1 000	CT	1 000	CT	1 000	0 42	30 10	30 10	33 2/	2 7	1972 83061	
		3 50			73 4	2 000	1 000	CT	1 000	CT	1 000	0 57	35 10	35 10	33 2/	2 7	1972 83061	
173	FB	3 50	- 65	T-L	70 3	2 000	1 000	CT	1 000	CT	1 000	0 18	18 90	18 90	20 0/	1 0	1972 83061	
		3 50			70 3	2 000	1 000	CT	1 000	CT	1 000	0 22	20 80	20 80	20 0/	1 0	1972 83061	
		3 50			70 3	2 000	1 000	CT	1 000	CT	1 000	0 21	20 20	20 20	20 0/	1 0	1972 83061	

TABLE 8.6.2.2.1 (Con't)

CONDITION	ALUMINUM				7049				K(1C)				DATE	REFER
	--PRODUCT-- FORM	THICK (IN)	TEST TEMP (F)	SPECIMEN ORIENT	YIELD (KSI)	-----SPECIMEN-----		CRACK LENGTH (IN)	2.5* (K(1C)/TYS)**2 (IN)	K(1C) MEAN DEV (KSI*SQRT IN)	K(1C) STAN DEV			
						WIDTH (IN)	THICK (IN)					DESIGN		
						W	B	A						
173	EB	3 50	0	T-L	69.6	2.000	1.000	CT	1.000	0.22	20.60		1972	83061
		3 50			69.6	2.000	1.000	CT	1.000	0.22	20.40		1972	83061
		3 50			69.6	2.000	1.000	CT	1.000	0.23	20.90	20.6/ 0.3	1972	83061
173	EB	3 50	R T	T-L	67.7	2.000	1.000	CT	1.000	0.25	21.50		1972	83061
		3 50			67.7	2.000	1.000	CT	1.000	0.27	22.40		1972	83061
		3 50			67.7	2.000	1.000	CT	1.000	0.27	22.10	22.0/ 0.5	1972	83061
173	EB	3 50	- 65	S-T	67.2	2.000	1.000	CT	1.000	0.24	20.70		1972	83061
	EB	3 50	0	S-T	66.5	2.000	1.000	CT	1.000	0.27	21.80		1972	83061
		3 50			66.5	2.000	1.000	CT	1.000	0.25	21.00		1972	83061
3 50				66.5	2.000	1.000	CT	1.000	0.26	21.60	21.5/ 0.4	1972	83061	
173	EB	3 50	R T	S-T	65.4	2.000	1.000	CT	1.000	0.30	22.50		1972	83061
	3 50				65.4	2.000	1.000	CT	1.000	0.30	22.60		1972	83061
	3 50				65.4	2.000	1.000	CT	1.000	0.33	23.80	23.0/ 0.7	1972	83061
17351	P	4.00	R T	T-L	53.6	1.500	0.750	CT	0.722	0.51	24.10		1973	86213
	4.00				53.6	1.490	0.748	CT	0.725	0.56	25.40		1973	86213
	2.00				59.4	1.500	0.750	CT	0.750	0.52	27.20		1973	86213
	2.00				59.4	1.500	0.748	CT	0.751	0.55	27.80	26.1/ 1.7	1973	86213
17351	P	4.00	R T	S-L	49.3	1.490	0.750	CT	0.700	0.53	23.20		1973	86213
	4.00				49.3	1.500	0.750	CT	0.730	0.59	24.00		1973	86213
	2.00				57.6	1.490	0.750	CT	0.715	0.42	23.50		1973	86213
	2.00				57.6	1.490	0.750	CT	0.704	0.45	24.50	23.8/ 0.6	1973	86213
173511-HIGH/ PURITY	EB	1.50	R T	L-T	76.7	2.500	1.250	CT	----	0.49	34.00		1980	WA001
	1.50				76.7	2.500	1.250	CT	----	0.49	33.80	33.9/ 0.1	1980	WA001
173511-HIGH/ PURITY	EB	1.50	R T	T-L	70.3	2.500	1.250	CT	----	0.34	26.00		1980	WA001
	1.50				70.3	2.500	1.250	CT	----	0.34	25.90	26.0/ 0.1	1980	WA001



TABLE 8.6.2.1 (Con't)

CONDITION	ALUMINUM				7049		K(1C)		DATE	REFER						
	--PRODUCT-- FORM	THICK (IN)	TEST TEMP (F)	SPECIMEN ORIENT	YIELD STRENGTH (KSI)	-----SPECIMEN-----		CRACK LENGTH (IN)								
						WIDTH (IN)	DESIGN									
											A					
		B														
176	EB	3 50	-	69	T-L	72.9	2 000	1 000	CT	1 000	0 17	19 00	19 20	0 2	1972	83061
		3 50				72.9	2 000	1 000	CT	1 000	0 18	19 30	19 20	0 2	1972	83061
176	EB	3 50	0		T-L	70.6	2 000	1 000	CT	1 000	0 22	20 80	20 20	0 8	1972	83061
		3 50				70.6	2 000	1 000	CT	1 000	0 19	19 60	20 20	0 8	1972	83061
176	EB	3 50	R T		T-L	68.6	2 000	1 000	CT	1 000	0 22	20 30			1972	83061
		3 50				68.6	2 000	1 000	CT	1 000	0 21	19 70			1972	83061
		3 50				68.6	2 000	1 000	CT	1 000	0 21	20 00	20 00	0 3	1972	83061
176	EB	3 50	-	65	S-T	67.5	2 000	1 000	CT	1 000	0 22	19 90			1972	83061
		3 50				67.5	2 000	1 000	CT	1 000	0 21	19 10			1972	83061
		3 50				67.5	2 000	1 000	CT	1 000	0 21	19 30	19 40	0 4	1972	83061
176	EB	3 50	0		S-T	66.6	2 000	1 000	CT	1 000	0 25	21 20			1972	83061
		3 50				66.6	2 000	1 000	CT	1 000	0 24	20 70			1972	83061
		3 50				66.6	2 000	1 000	CT	1 000	0 24	20 50	20 80	0 4	1972	83061
176	EB	3 50	R T		S-T	65.8	2 000	1 000	CT	1 000	0 25	20 90			1972	83061



TABLE 8.6.3.1

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.6.3.1 INDICATING EFFECT

OF ENVIRONMENT

MATERIAL: ALUMINUM  
CONDITION: T73

7049

DELTA K  
(KSI\*IN\*\*1/2)

DA/DN (10\*\*-6 IN./CYCLE)

A

B

C

D

E= R. T.

E= R. T.

E= R. T.

DRY AIR

H. H. A.

SALT FOG

DELTA K MIN  
A: 6.17  
B: 6.21  
C: 6.07  
D:

4.17

10.4

9.11

7.00

6.89

11.7

10.8

8.00

10.1

16.5

15.7

9.00

14.8

30.7

21.5

10.00

24.8

28.5

30.1

DELTA K MAX  
A: 11.88  
B: 10.89  
C: 11.44  
D:

112.

100.

76.4

ROOT MEAN SQUARE  
PERCENT ERROR

16.76

9.08

7.82

LIFE PREDICTION RATIO SUMMARY  
(NP/NA) 0.0-0.5  
0.5-0.8  
0.8-1.25  
1.25-2.0  
>2.0

2

1

1

CONDITION/HT: T73  
 FORM: 4.00- 5.00" TH FORGING  
 SPECIMEN TYPE: CT  
 ORIENTATION: T-L  
 STRESS RATIO: +0.33  
 FREQUENCY: 18.30

YIELD STRENGTH: 58.1- 68.5 KSI  
 ULT. STRENGTH: 68.4- 76.4 KSI  
 SPECIMEN THK: 1.495- 1.502"  
 SPECIMEN WIDTH: 3.800"  
 REFERENCES: 86842

ALUM.  
ALLOY

7049

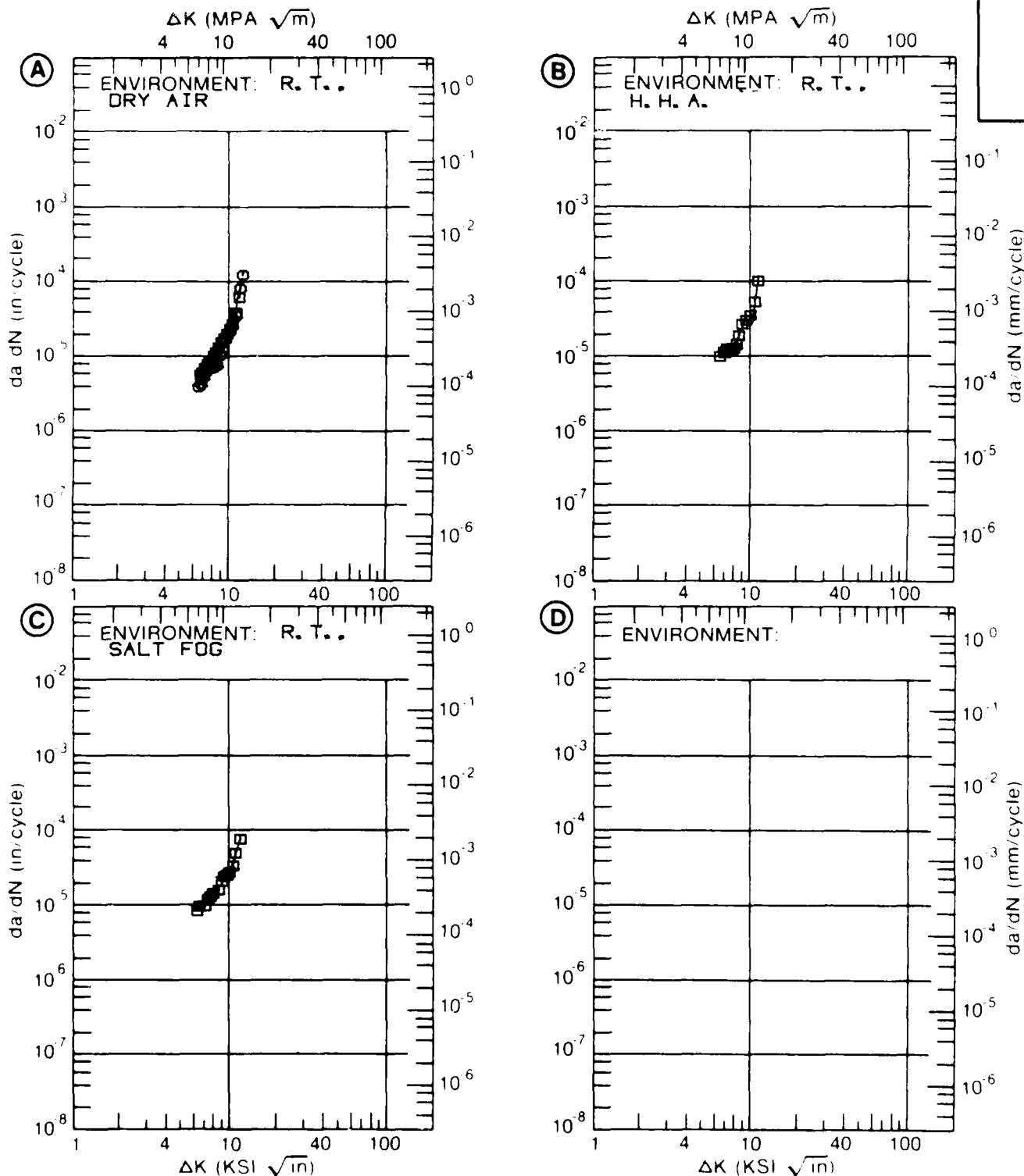


Figure 8.6.3.1

TABLE 8.6.3.2

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.6.3.2 INDICATING EFFECT  
OF ENVIRONMENT

MATERIAL: ALUMINUM 7049  
CONDITION: T73

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R. T. DRY AIR	E= R. T. H. H. A.	E= R. T. SALT FOG	
DELTA K	A: 5.96	2.16			
MIN	B: 6.02		3.75		
	C: 5.30			3.18	
	D:				
	6.00	2.21		5.58	
	7.00	3.98	6.87	9.92	
	8.00	6.87	10.0	14.0	
	9.00	10.3	12.5	17.9	
	10.00	13.9	15.5	22.2	
	13.00	28.6	42.9	46.1	
	16.00	62.3		105.	
	20.00			130.	
DELTA K	A: 17.34	82.1			
MAX	B: 15.15		71.3		
	C: 20.25			126.	
	D:				
ROOT MEAN SQUARE		5.13	6.07	6.24	
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25	1	1	1	
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION/HT: T73  
 FORM: 5.00" TH FORGING  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T  
 STRESS RATIO: +0.33  
 FREQUENCY: 5.20

YIELD STRENGTH: 60.1 KSI  
 ULT. STRENGTH: 70.3 KSI  
 SPECIMEN THK: 0.748- 0.750"  
 SPECIMEN WIDTH: 3.000"  
 REFERENCES: 86842

ALUM.  
 ALLOY

7049

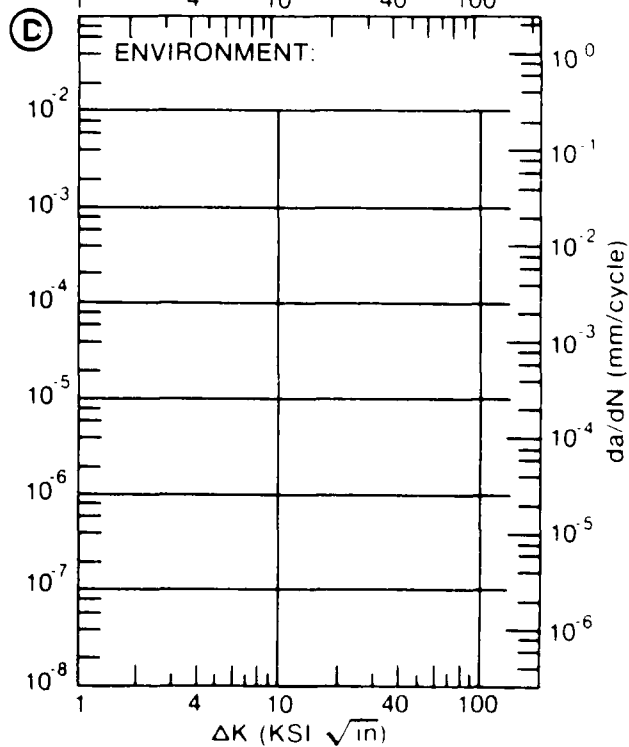
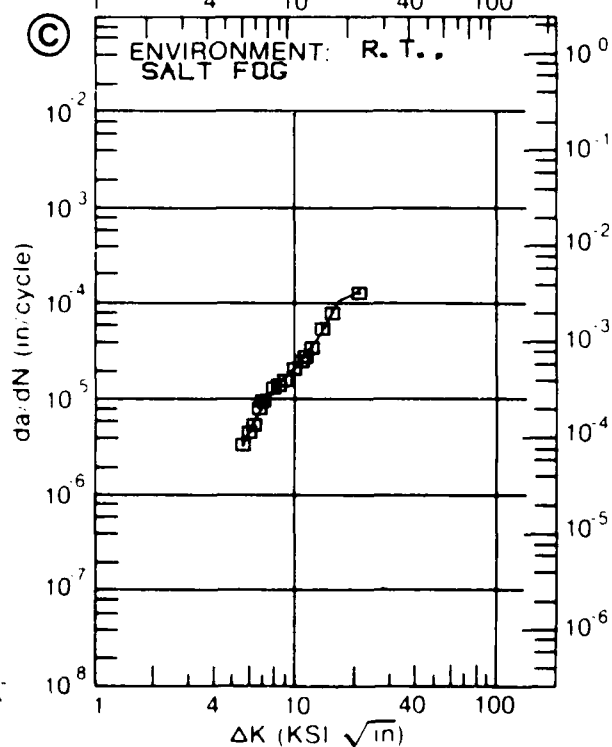
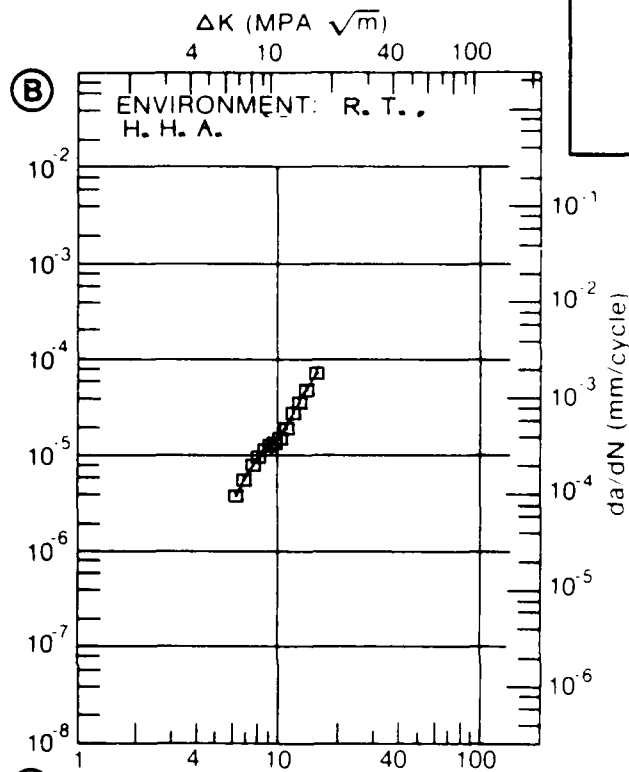
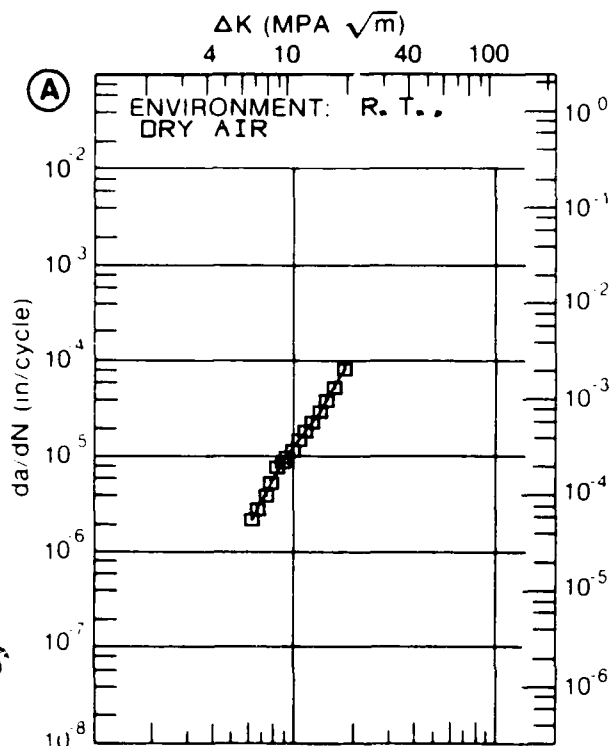


Figure 8.6.3.2

TABLE 8.6.3.3

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTORDATA ASSOCIATED WITH FIGURE 8.6.3.3 INDICATING EFFECT  
OF ENVIRONMENTMATERIAL: ALUMINUM 7049  
CONDITION: T73

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R.T. SALT FOG			
DELTA K MIN	A:	5.98	6.46		
	B:				
	C:				
	D:				
		6.00	6.57		
		7.00	12.2		
DELTA K MAX		8.00	18.3		
		9.00	25.3		
		10.00	34.3		
	A:	12.94	99.5		
	B:				
	C:				
	D:				

ROOT MEAN SQUARE 14.86  
PERCENT ERROR

LIFE	0.0-0.5	
PREDICTION	0.5-0.8	1
RATIO	0.8-1.25	2
SUMMARY	1.25-2.0	
(NP/NA)	>2.0	

CONDITION HT: T73  
 FORM 5.00" TH FORGING  
 SPECIMEN TYPE: CCP  
 ORIENTATION: T-L  
 STRESS RATIO: +0.33  
 FREQUENCY: 5.20

YIELD STRENGTH 58.1 KSI  
 ULT STRENGTH 68.4 KSI  
 SPECIMEN THK 0.745- 0.752"  
 SPECIMEN WIDTH 3.000"  
 REFERENCES 86842

ALLOY  
 ALLOY

7249

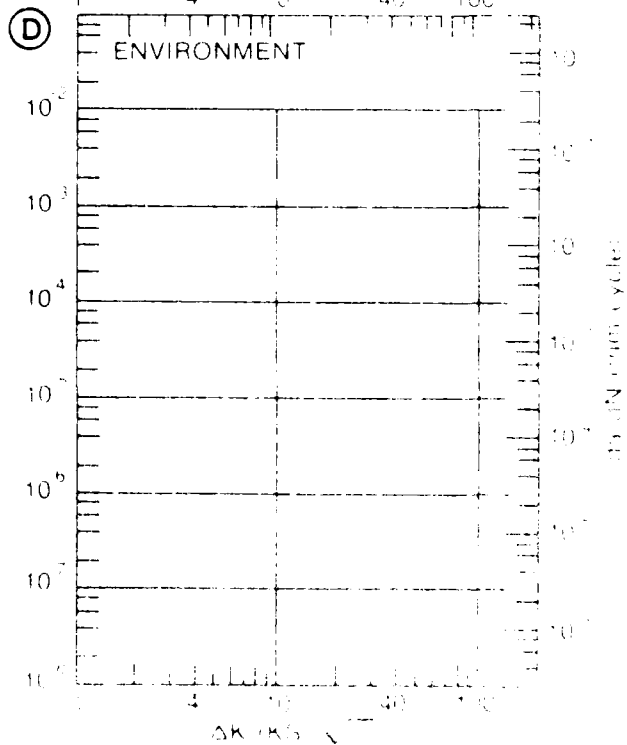
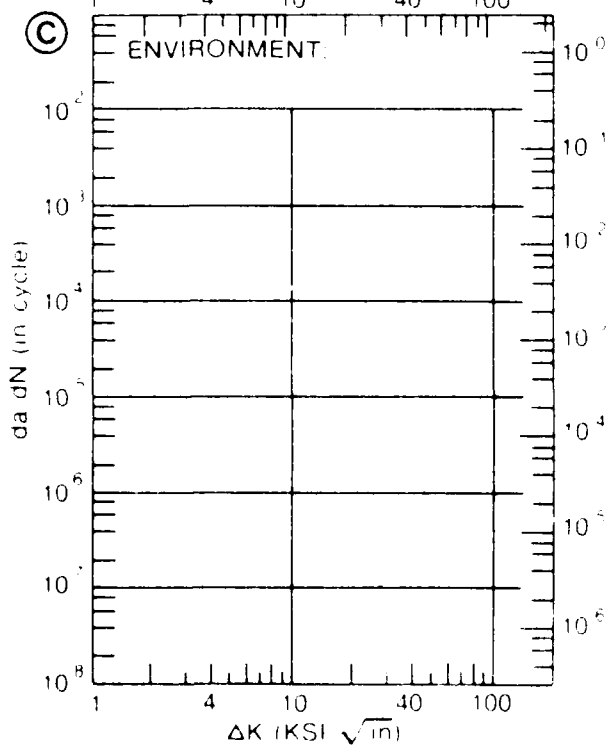
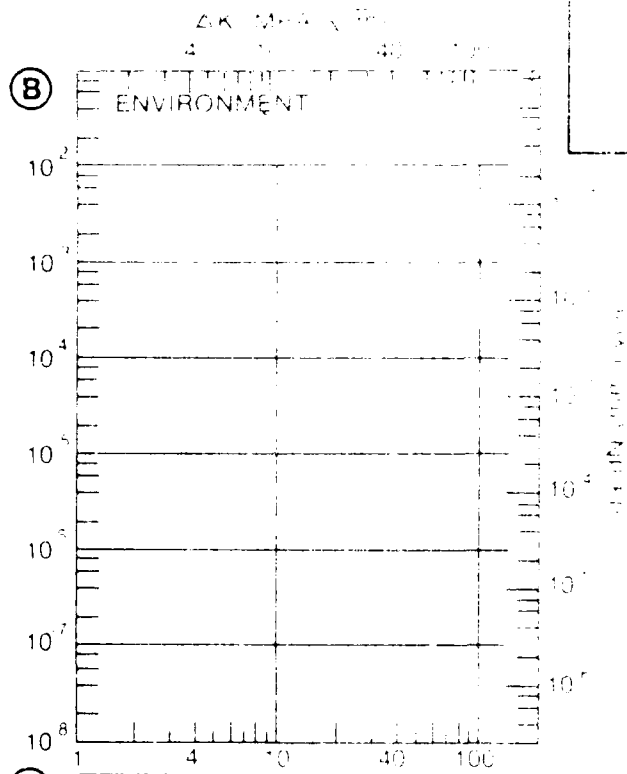
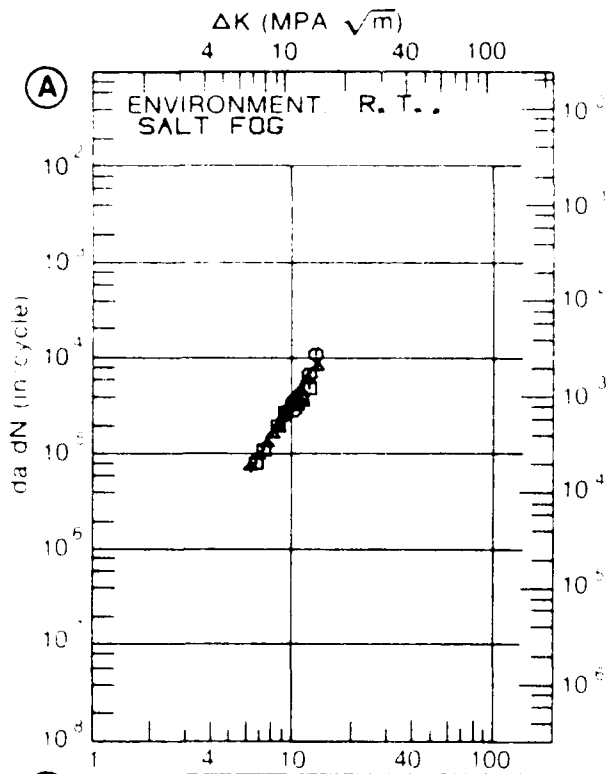


Figure 8.6.3.2

TABLE 8.6.3.4

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTORDATA ASSOCIATED WITH FIGURE 8.6.3.4 INDICATING EFFECT  
OF ENVIRONMENT

MATERIAL: ALUMINUM		7049			
CONDITION: T/3					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R. T. DRY AIR	E= R. T. H. H. A		
DELTA K	A: 6.20	.211			
MIN	B: 6.14		1.80		
	C:				
	D:				
	7.00	.883	4.42		
	8.00	1.66	10.0		
	9.00	2.60	14.7		
	10.00	6.08	18.7		
	13.00	18.0			
DELTA K	A: 13.74	31.7			
MAX	B: 11.75		41.3		
	C:				
	D:				
ROOT MEAN SQUARE		16.39	16.49		
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25	1	1		
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION/HT: T73  
 FORM: 5.00" TH FORGING  
 SPECIMEN TYPE: CT  
 ORIENTATION: S-T  
 STRESS RATIO: +0.33  
 FREQUENCY: 18.30 HZ

YIELD STRENGTH: 59.1 KSI  
 ULT. STRENGTH: 68.1 KSI  
 SPECIMEN THK: 1.500- 1.501"  
 SPECIMEN WIDTH: 3.800"  
 REFERENCES: 86842

ALUM.  
 ALLOY

7049

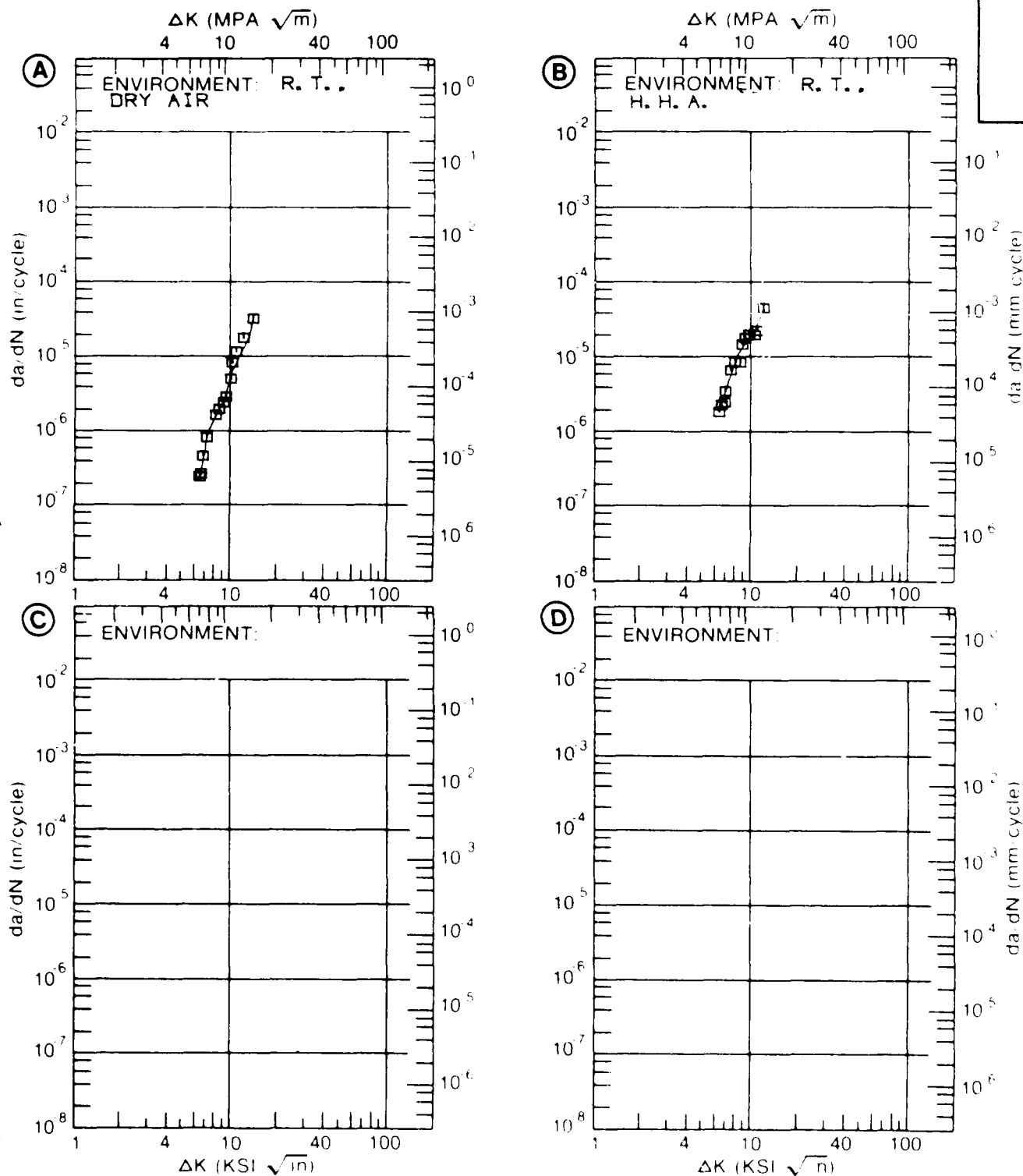


Figure 8.6.3.4



TABLE 8.6.3.5

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.6.3.5 INDICATING EFFECT

OF STRESS RATIO

MATERIAL ALUMINUM 7049  
 CONDITION: T7351  
 ENVIRONMENT: R T / L H A

DELTA K (KSI*IN**1/2)		DA/DN (10** -6 IN /CYCLE)			
		A	B	C	D
		R=-1.00	R=+0.00	R=+0.50	
DELTA K MIN	A:	5.51	584		
	B:	5.71	454		
	C:	4.10		344	
	D:				
	5.00			765	
	6.00	.635	515	1.71	
	7.00	.894	.795	3.43	
	8.00	1.40	1.21	6.13	
	9.00	2.26	1.79	9.87	
	10.00	3.59	2.58	14.6	
	13.00	11.5	6.57	30.7	
	16.00	24.2	13.6	49.2	
	20.00	43.9	28.3	108	
	25.00	85.6	56.9	336	
	30.00	179	101	827	
	35.00	330	171		
	40.00	507	289		
DELTA K MAX	A:	47.38	1288		
	B:	49.15	587		
	C:	34.04		833	
	D:				
ROOT MEAN SQUARE		9.31	15.85	12.92	
PERCENT ERROR					

LIFE 0.0-0.5  
 PREDICTION 0.5-0.8  
 RATIO 0.8-1.25  
 SUMMARY 1.25-2.0  
 (NP/NA) 2.0

CONDITION/HT: T7351  
 FORM: 1.25" TH PLATE  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T  
 FREQUENCY: 10.00 HZ  
 ENVIRONMENT: R. T., L. H. A.

YIELD STRENGTH: 72.0 KSI  
 ULT. STRENGTH: 80.5 KSI  
 SPECIMEN THK: 0.250"  
 SPECIMEN WIDTH: 4.000"  
 REFERENCES: MA007

ALUM.  
 ALLOY

7049

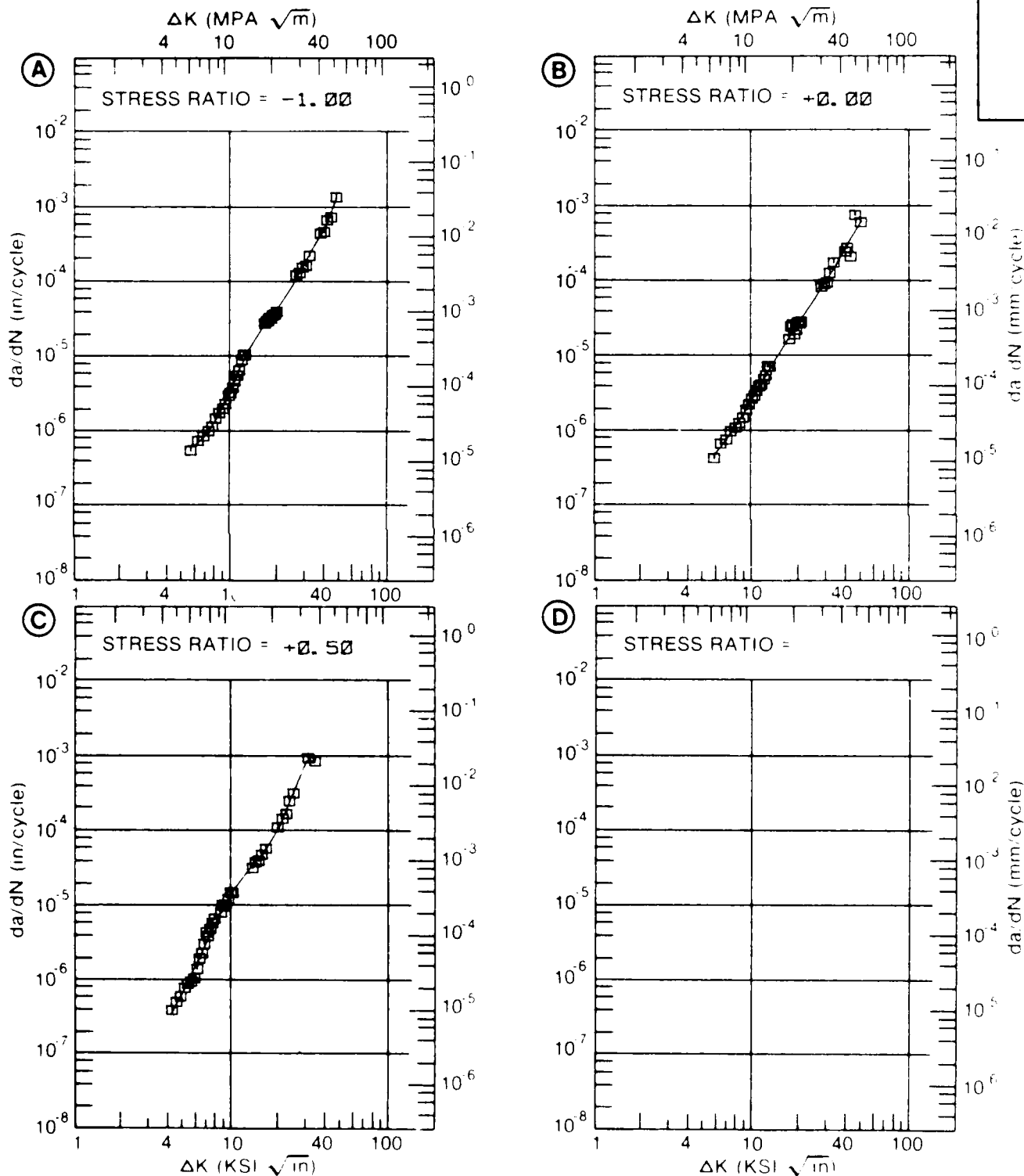


Figure 8.G.3.5

TABLE 8.6.3.6

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.6.3.6 INDICATING EFFECT

OF STRESS RATIO

MATERIAL: ALUMINUM		7049			
CONDITION		T7351			
ENVIRONMENT		R T 3 5% NaCl			
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN /CYCLE)			
		A	B	C	D
		R=-1.00	R=+0.50		
DELTA K MIN	A:	5.59	2.34		
	B:	4.09	1.19		
	C:				
	D:				
	5.00		4.30		
	6.00	3.27	10.4		
	7.00	32	18.6		
	8.00	10.4	28.0		
	9.00	15.2	38.1		
	10.00	20.7	48.8		
	13.00	40.1	86.6		
	16.00	62.3	137		
	20.00	96.5	228		
	25.00	150	383		
	30.00	222	588		
	35.00	322	705		
	40.00	462			
DELTA K MAX	A:	48.22	833		
	B:	36.70	659		
	C:				
	D:				
ROOT MEAN SQUARE		18.32	14.87		
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25				
SUMMARY	1.25-2.0				
(NP/NA)	2.0				

CONDITION/HT: T7351  
 FORM: 1.25" TH PLATE  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T  
 FREQUENCY: 0.10 HZ  
 ENVIRONMENT: R.T., 3.5% NaCl

YIELD STRENGTH: 72.0 KSI  
 ULT. STRENGTH: 80.5 KSI  
 SPECIMEN THK: 0.250"  
 SPECIMEN WIDTH: 4.000"  
 REFERENCES: MA007

ALUM.  
 ALLOY

7049

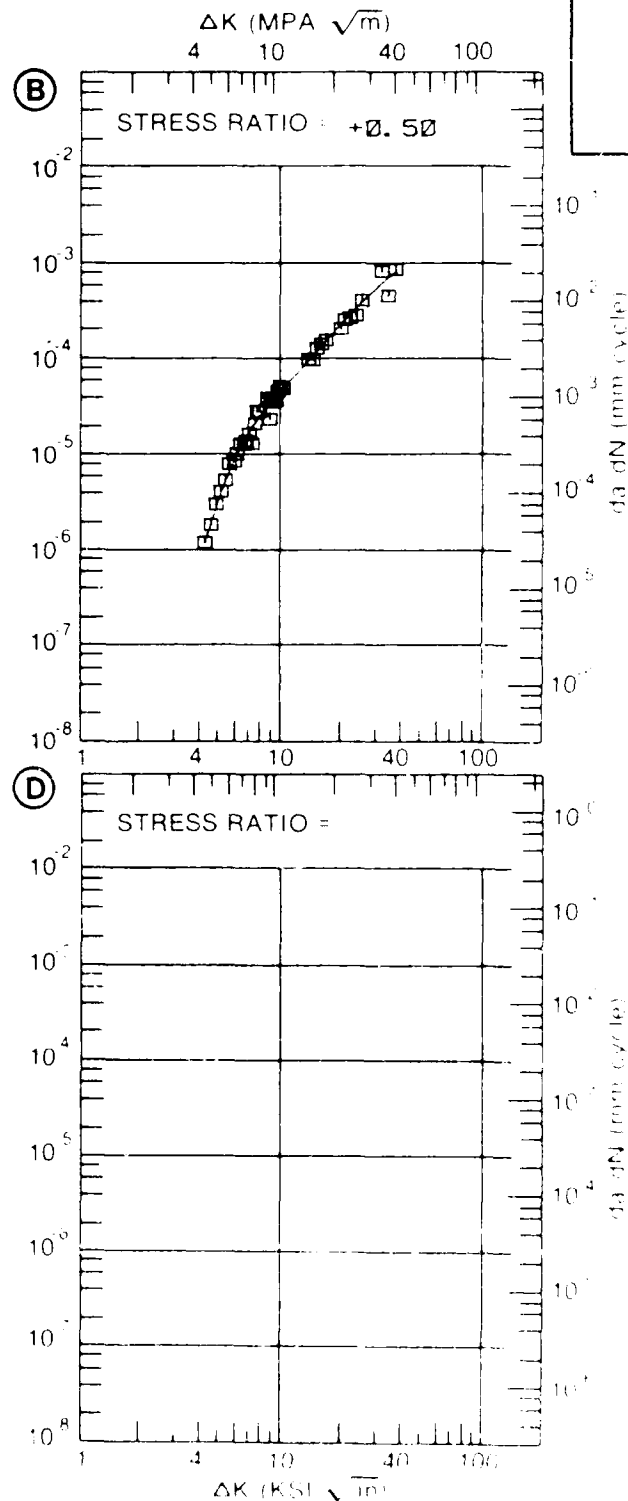
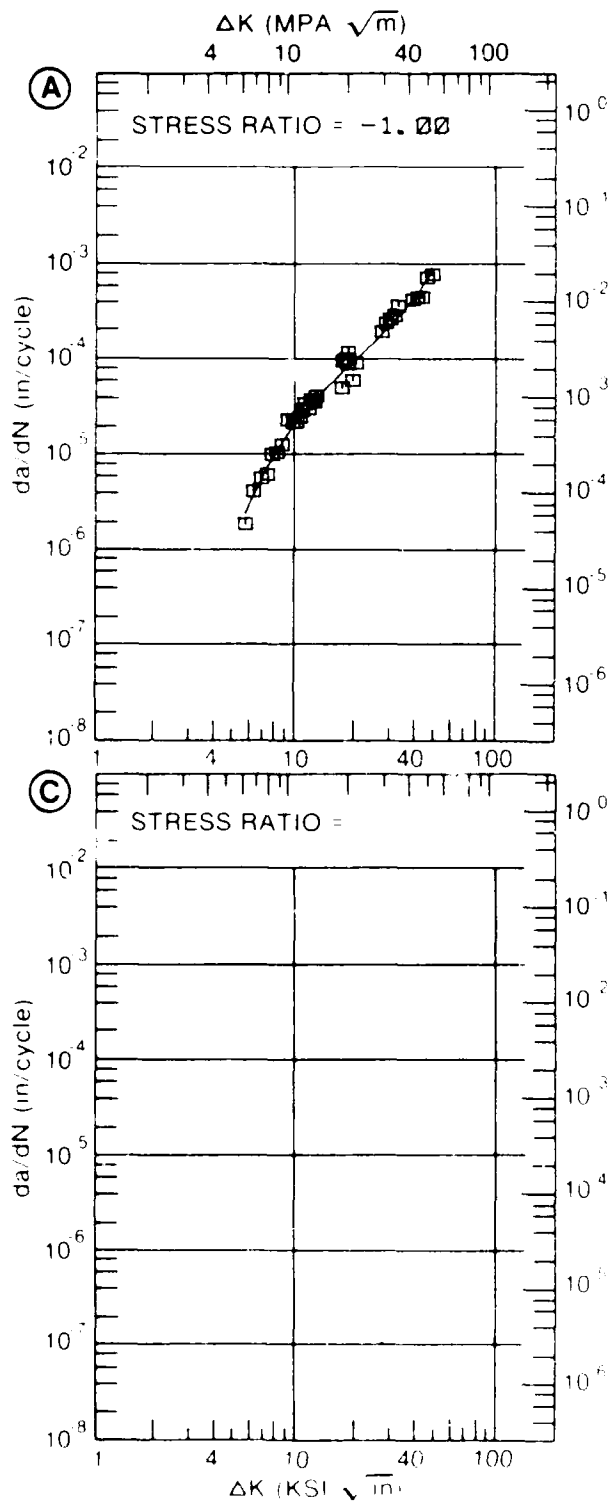


Figure 2.1.3.6

TABLE 8.6.3.7

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTORDATA ASSOCIATED WITH FIGURE 8.6.3.7 INDICATING EFFECT  
OF FREQUENCY

MATERIAL: ALUMINUM 7049  
 CONDITION T7351  
 ENVIRONMENT: R T , 3.5% NaCl.

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		(HZ)= 1.00 F(HZ)= 10.00			
DELTA K MIN	A:	5.54	2.42		
	B:	5.44		1.54	
	C:				
	D:				
	6.00	4.64	3.08		
	7.00	13.0	7.31		
	8.00	25.5	12.8		
	9.00	40.5	18.9		
	10.00	56.1	25.1		
	13.00	100.	44.3		
	16.00	145.	70.5		
	20.00	224.	125.		
	25.00	381.	212.		
	30.00	631.	295.		
	35.00	946.	384.		
	40.00	1268.	498.		
	50.00	2158.	928.		
	60.00	4564.	2129.		
DELTA K MAX	A:	61.17	5082.		
	B:	67.01	4311.		
	C:				
	D:				
ROOT MEAN SQUARE		18.36	14.62		
PERCENT ERROR					

LIFE 0.0-0.5  
 PREDICTION 0.5-0.8  
 RATIO 0.8-1.25  
 SUMMARY 1.25-2.0  
 (NP/NA) >2.0

CONDITION/HT: T7351  
 FORM: 1.25" TH PLATE  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T  
 STRESS RATIO: +0.00  
 ENVIRONMENT: R. T., 3.5% NaCl

YIELD STRENGTH: 72.0 KSI  
 ULT. STRENGTH: 80.5 KSI  
 SPECIMEN THK: 0.250"  
 SPECIMEN WIDTH: 4.000"  
 REFERENCES: MA007

ALUM.  
ALLOY

7049

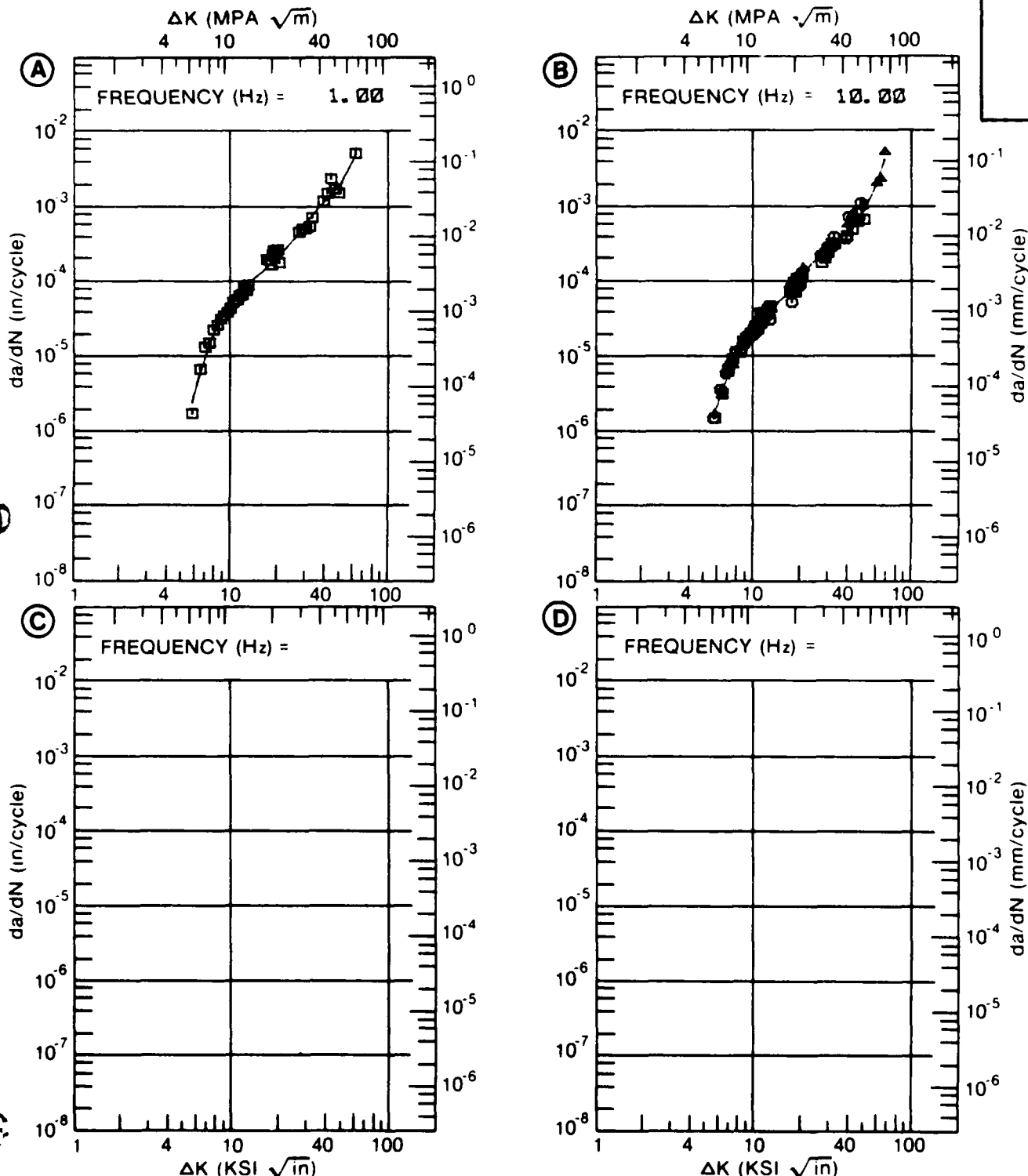


Figure 8.6.3.7

TABLE 8.6.3.8

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.6.3.8 INDICATING EFFECT  
OF ENVIRONMENT

MATERIAL: ALUMINUM 7049					
CONDITION: T73511-HIGH PURITY					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R. T. LAB AIR	E= R. T. H. H. A.		
DELTA K MIN	A:	5.95	.726		
	B:	6.21	1.25		
	C:				
	D:				
	6.00	.792			
	7.00	2.72	3.06		
	8.00	5.00	6.55		
	9.00	6.72	10.8		
	10.00	7.84	15.4		
	13.00	11.5	29.0		
	16.00	19.0	46.3		
DELTA K MAX	A:	18.73	28.2		
	B:	18.07	65.8		
	C:				
	D:				
ROOT MEAN SQUARE		5.91	5.87		
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25				
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION/HT: T73511-HIGH  
 FORM: 1.50" TH EXTRUSION  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 STRESS RATIO: +0.10  
 FREQUENCY: 30.00

PURITY

YIELD STRENGTH: 76.7 KSI  
 ULT. STRENGTH: 83.9 KSI  
 SPECIMEN THK: 0.625"  
 SPECIMEN WIDTH: 2.550"  
 REFERENCES: WA001

ALUM.  
 ALLOY

7049

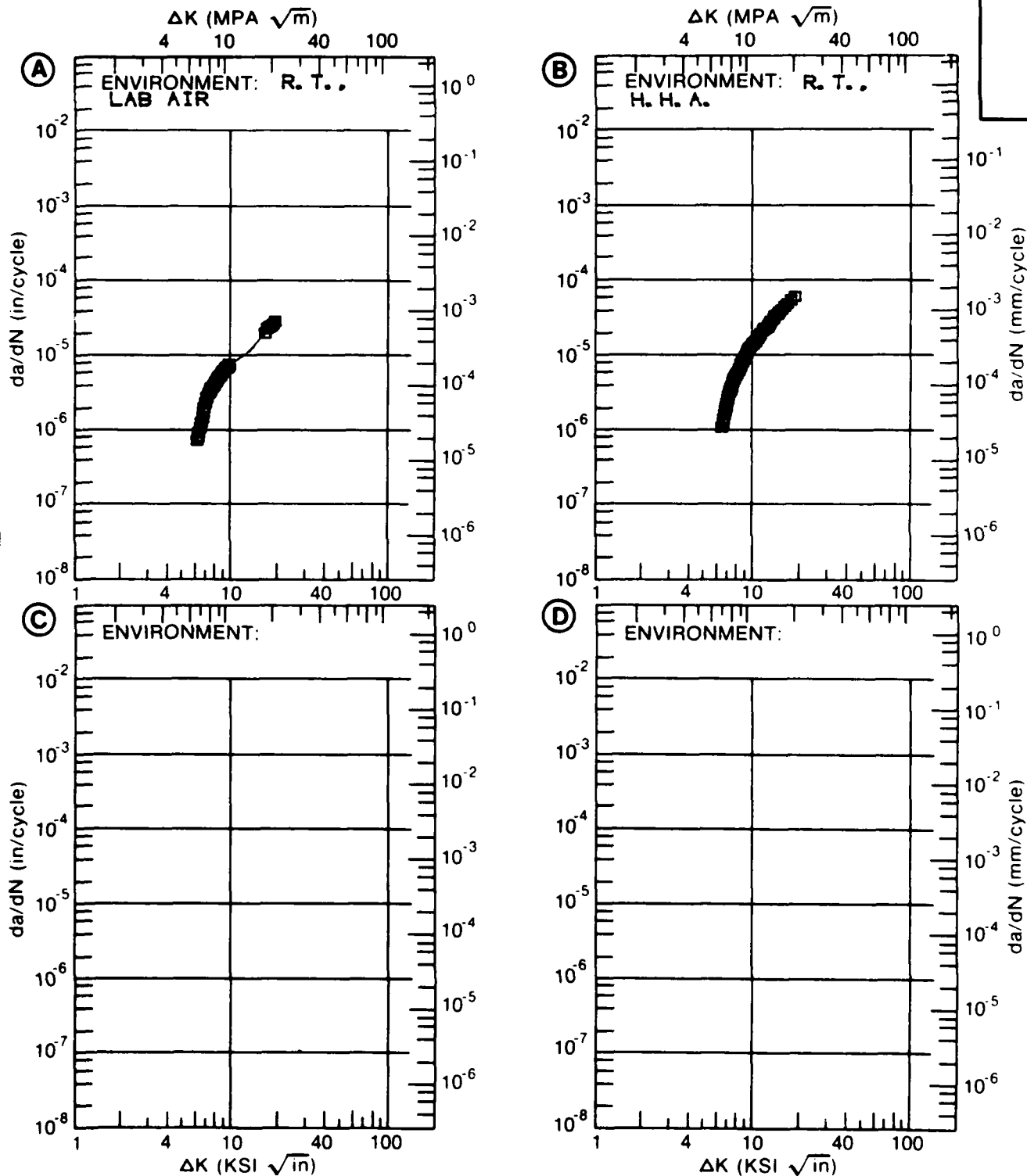


Figure 8.6.3.8



TABLE 8.6.3.9

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTORDATA ASSOCIATED WITH FIGURE 8.6.3.9 INDICATING EFFECT  
OF ENVIRONMENTMATERIAL: ALUMINUM 7049  
CONDITION: T73511-HIGH PURITY

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R. ... LAB AIR			
DELTA K MIN	A: 6.17	1.78			
	B:				
	C:				
	D:				
	7.00	2.91			
	8.00	4.44			
	9.00	6.06			
	10.00	7.81			
	13.00	15.0			
	16.00	29.7			
DELTA K MAX	A: 16.25	31.6			
	B:				
	C:				
	D:				

ROOT MEAN SQUARE 14.30  
PERCENT ERRORLIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25  
SUMMARY 1.25-2.0  
(NP/NA) >2.0

CONDITION/HT: T73511-HIGH PURITY  
 FORM: 1.50" TH EXTRUSION  
 SPECIMEN TYPE: CT  
 ORIENTATION: T-L  
 STRESS RATIO: +0.10  
 FREQUENCY: 30.00

YIELD STRENGTH: 70.3 KSI  
 ULT. STRENGTH: 78.5 KSI  
 SPECIMEN THK: 0.625"  
 SPECIMEN WIDTH: 2.550"  
 REFERENCES: WA001

ALUM.  
 ALLOY

7049

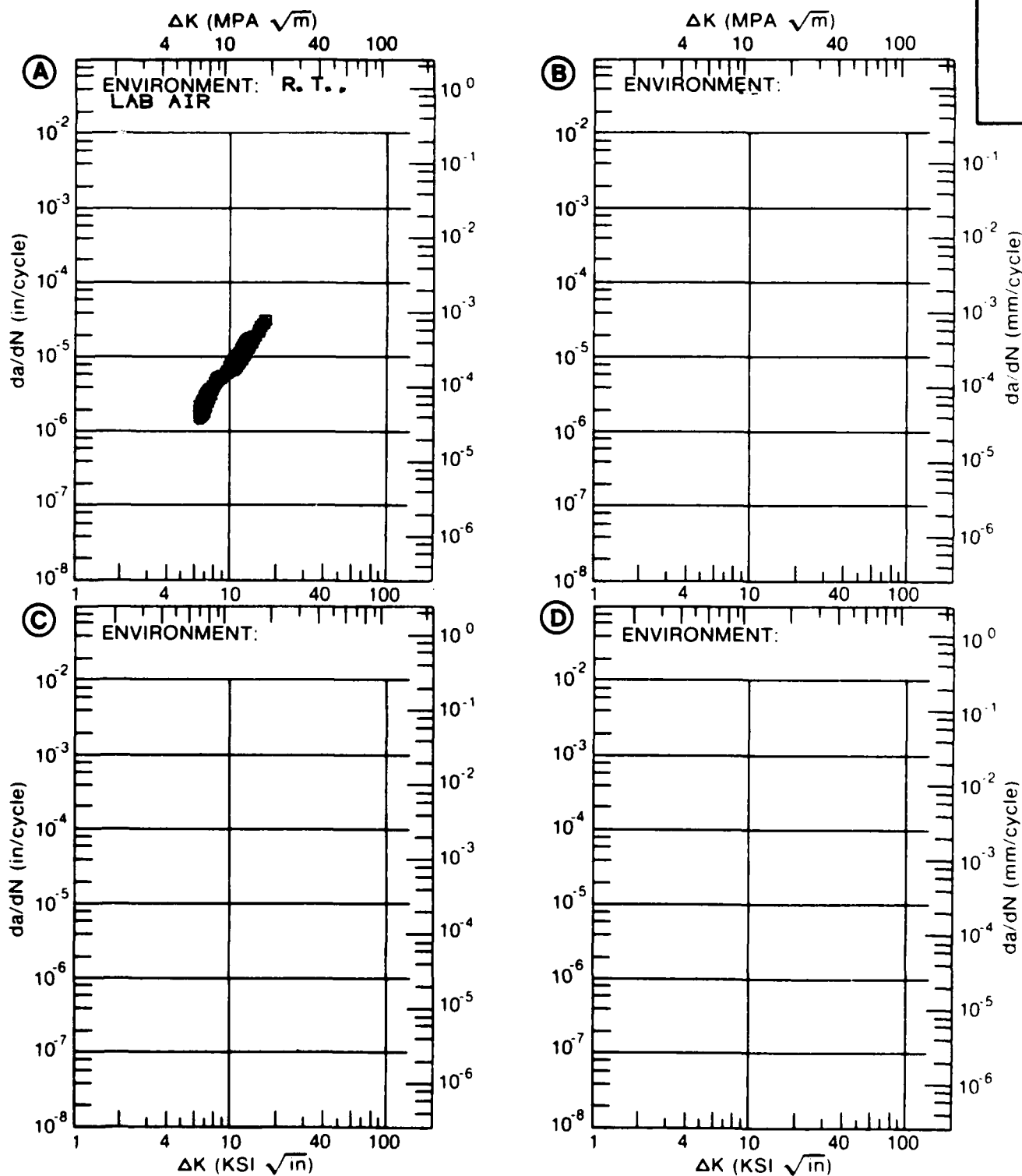


Figure 8.6.3.9

TABLE 8.6.3.10

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.6.3.10 INDICATING EFFECT

## OF ENVIRONMENT

MATERIAL: ALUMINUM 7049  
CONDITION: T73511-LOW PURITY

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		E= R. T. LAB AIR	E= R. T. H. H. A.		
DELTA K MIN	A:	6.10	.567		
	B:	5.94	.867		
	C:				
	D:				
	6.00		.944		
	7.00	1.80	2.83		
	8.00	3.78	5.55		
	9.00	5.76	8.56		
	10.00	7.32	11.5		
	13.00	10.2	19.9		
	16.00		32.3		
DELTA K MAX	A:	14.37	11.6		
	B:	16.99	38.8		
	C:				
	D:				
ROOT MEAN SQUARE		11.79	8.70		
PERCENT ERROR					

LIFE 0.0-0.9  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25  
SUMMARY 1.25-2.0  
(NP/NA) >2.0

CONDITION/HT: T73511-LDW  
 FORM: 1.50" TH EXTRUSION  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 STRESS RATIO: +0.10  
 FREQUENCY: 30.00

PURITY

YIELD STRENGTH: 73.1 KSI  
 ULT. STRENGTH: 80.0 KSI  
 SPECIMEN THK: 0.625"  
 SPECIMEN WIDTH: 2.550"  
 REFERENCES: WA001

ALUM.  
 ALLOY

7049

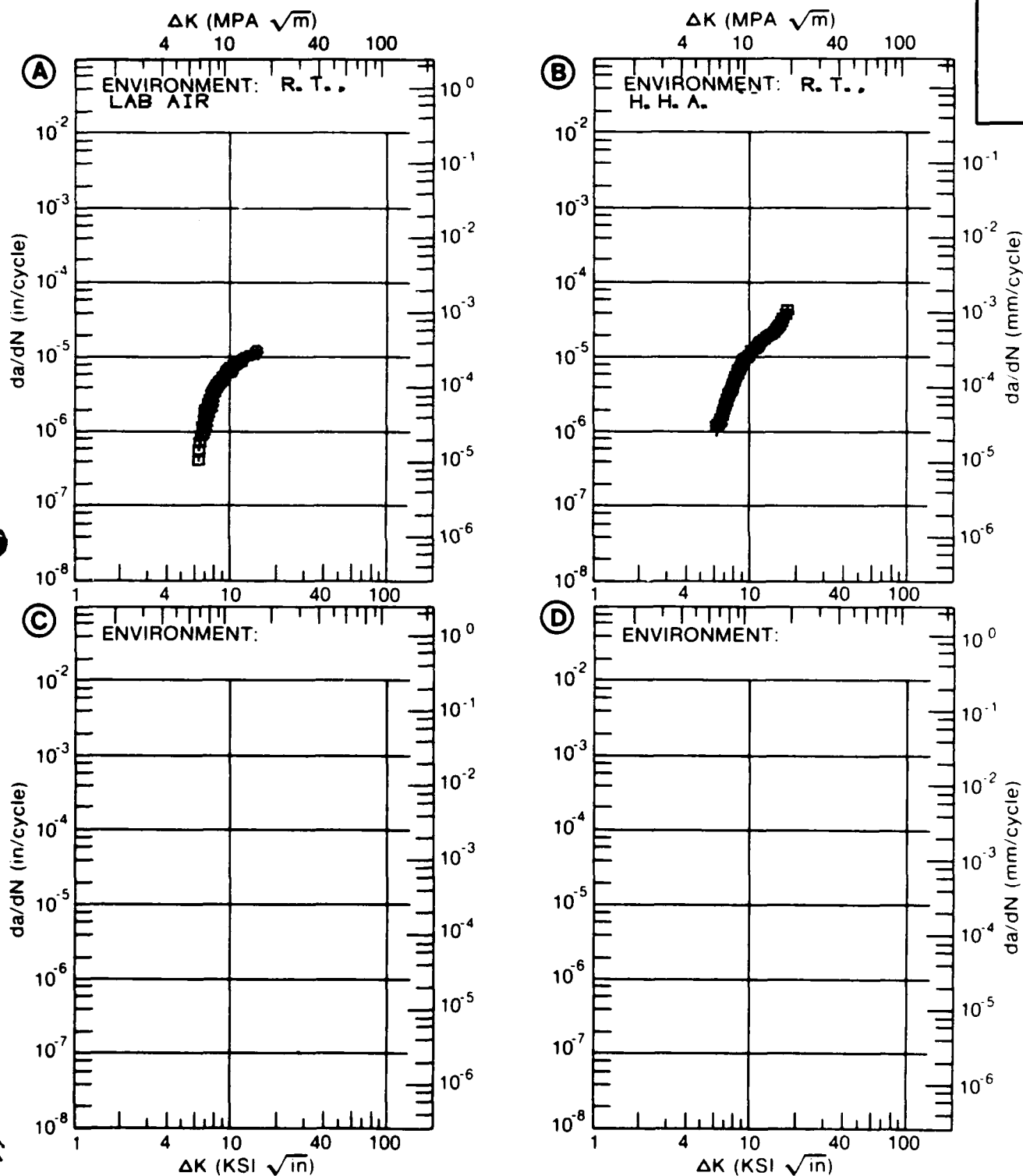


Figure 8.6.3.10

TABLE 8.6.3.11

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.6.3.11 INDICATING EFFECT  
OF STRESS RATIO

MATERIAL: ALUMINUM 7049  
CONDITION: T73511-LOW PURITY  
ENVIRONMENT: R T , LAB AIR

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		R=+0.10			
DELTA K MIN	A: 6.07	1.39			
	B:				
	C:				
	D:				
	7.00	2.98			
	8.00	4.99			
DELTA K MAX	9.00	7.08			
	10.00	9.33			
	13.00	20.0			
	A: 14.70	33.5			
DELTA K MAX	B:				
	C:				
	D:				

ROOT MEAN SQUARE 7.33  
PERCENT ERROR

LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25  
SUMMARY 1.25-2.0  
(NP/NA) >2.0

CONDITION/HT: T73511-L0W PURITY  
 FORM: 1.50" TH EXTRUSION  
 SPECIMEN TYPE: CT  
 ORIENTATION: T-L  
 FREQUENCY: 30.00  
 ENVIRONMENT: R. T., LAB AIR

YIELD STRENGTH: 68.6 KSI  
 ULT. STRENGTH: 75.7 KSI  
 SPECIMEN THK: 0.625"  
 SPECIMEN WIDTH: 2.550"  
 REFERENCES: WA001

ALUM.  
 ALLOY

7049

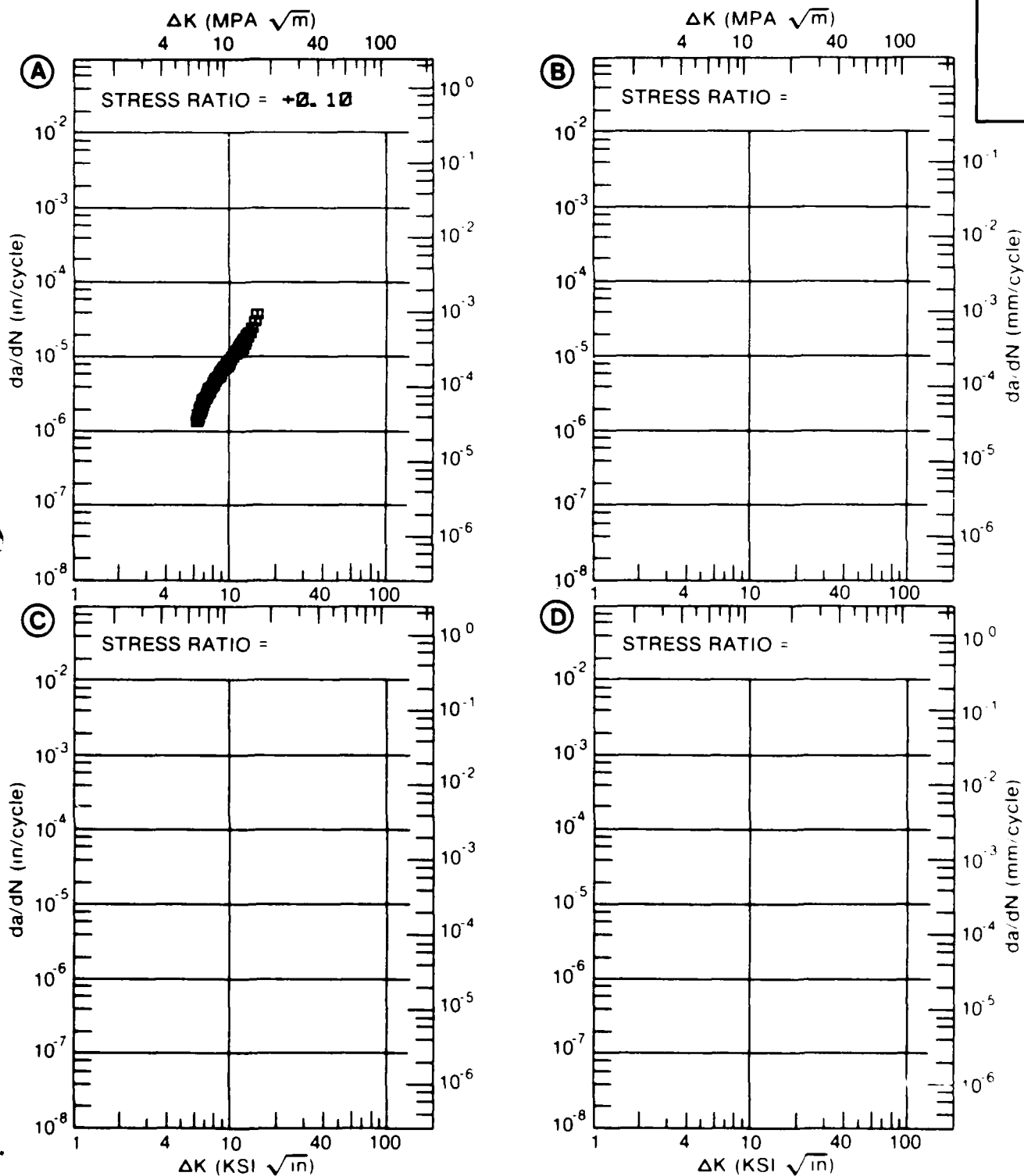


Figure 8.6.3.11

TABLE 8.6.3.12

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.6.3.12 INDICATING EFFECT  
OF ENVIRONMENT

MATERIAL: ALUMINUM		7049			
CONDITION: T73511-MEDIUM PURITY					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		E= R. T.	E= R. T.		
LAB AIR		H. H. A.			
DELTA K	A: 5.97	.423			
MIN	B: 5.98		1.41		
	C:				
	D:				
	6.00	.435	1.44		
	7.00	.969	3.55		
	8.00	1.68	6.61		
	9.00	2.52	10.3		
	10.00	3.44	14.2		
	13.00	6.65	25.3		
	16.00	11.2	34.3		
DELTA K	A: 18.90	18.2			
MAX	B: 17.55		38.5		
	C:				
	D:				
ROOT MEAN SQUARE		22.36	9.47		
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25				
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION/HT: T73511-MEDIUM PURITY  
 FORM: 1.50" TH EXTRUSION  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 STRESS RATIO: +0.10  
 FREQUENCY: 30.00

YIELD STRENGTH: 75.4 KSI  
 ULT. STRENGTH: 82.5 KSI  
 SPECIMEN THK: 0.625"  
 SPECIMEN WIDTH: 2.550"  
 REFERENCES: WA001

ALUM.  
ALLOY

7049

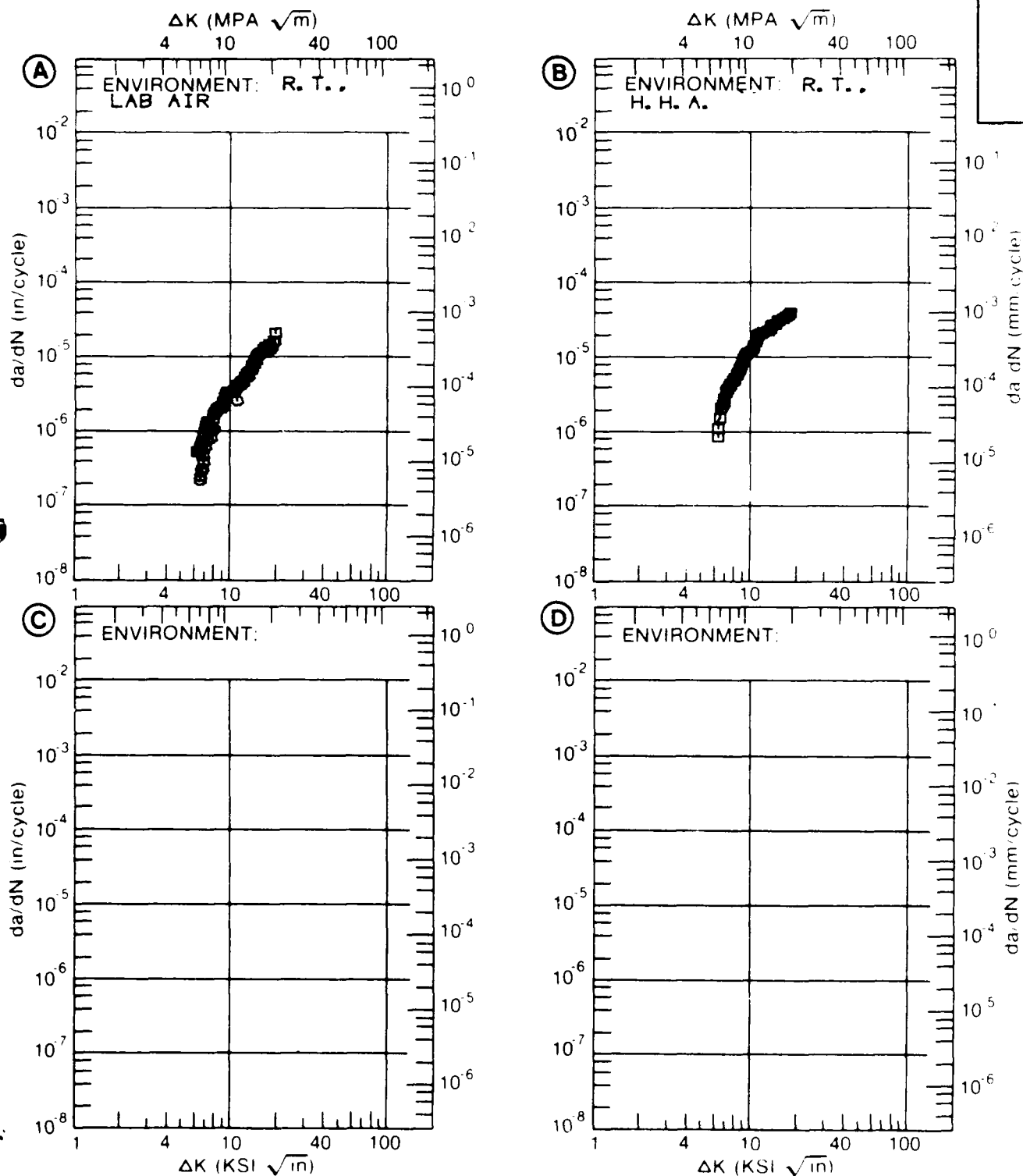


Figure 8.6.3.12



TABLE 8.6.3.13

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.6.3.13 INDICATING EFFECT

OF STRESS RATIO

MATERIAL: ALUMINUM 7049  
CONDITION: T73511-MEDIUM PURITY  
ENVIRONMENT: R T , LAB AIR

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		R=+0.10			
DELTA K MIN	A: 6.21	1.59			
	B:				
	C:				
	D:				
	7.00	2.74			
	8.00	4.80			
	9.00	6.59			
DELTA K MAX	10.00	8.36			
	13.00	15.9			
	16.00	37.8			
	A: 16.60	46.6			
	B:				
	C:				
	D:				
ROOT MEAN SQUARE		11.31			
PERCENT ERROR					

LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25  
SUMMARY 1.25-2.0  
(NP/NA) >2.0

CONDITION/HT: T73511-MEDIUM PURITY  
 FORM: 1.50" TH EXTRUSION  
 SPECIMEN TYPE: CT  
 ORIENTATION: T-L  
 FREQUENCY: 30.00  
 ENVIRONMENT: R. T., LAB AIR

YIELD STRENGTH: 69.2 KSI  
 ULT. STRENGTH: 76.5 KSI  
 SPECIMEN THK: 0.625"  
 SPECIMEN WIDTH: 2.550"  
 REFERENCES: WA001

ALUM.  
 ALLOY

7049

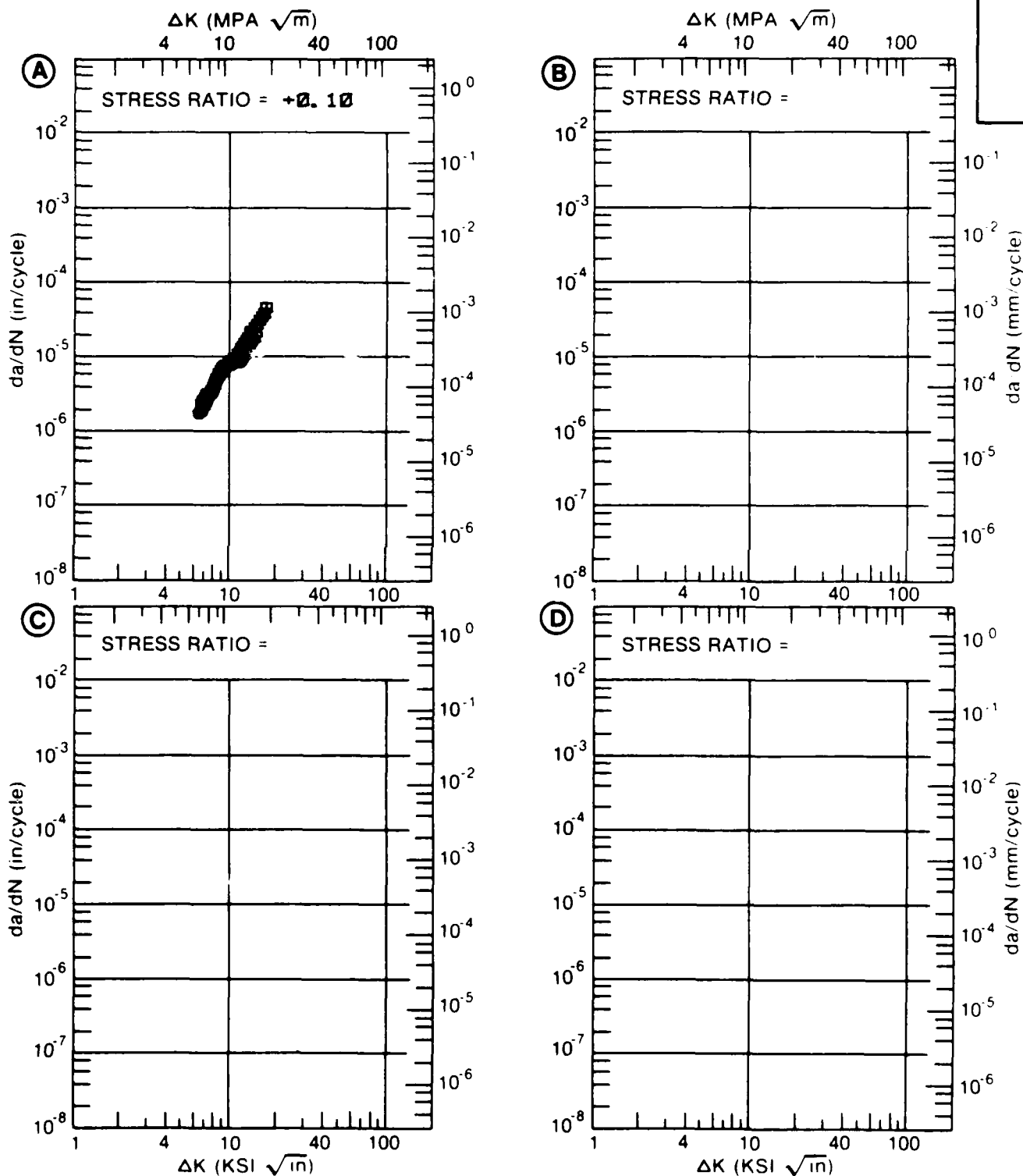


Figure 8.6.3.13

TABLE 8.6.3.14

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.6.3.14 INDICATING EFFECT  
OF STRESS RATIO

MATERIAL: ALUMINUM 7049  
CONDITION: T7352  
ENVIRONMENT: R.T., L.H.A.

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		R=+0.08	R=+0.30	R=+0.50	
A:	3.03	.199			
DELTA K B:	2.27		.0632		
MIN C:	2.36			.131	
D:					
	2.50		.0652	.117	
	3.00		.232	.200	
	3.50	.242	.331	.498	
	4.00	.333	.491	.912	
	5.00	.666	1.03	1.29	
	6.00	1.21	1.93	2.59	
	7.00	1.91	3.29	5.39	
	8.00	2.80	5.20	8.14	
	9.00	3.99	7.76	9.42	
	10.00	5.63	11.0		
	13.00	15.8	25.9		
	16.00	16.0			
A:	16.00	16.0			
DELTA K B:	15.87		47.6		
MAX C:	9.67			9.24	
D:					
ROOT MEAN SQUARE		14.91	17.33	24.51	
PERCENT ERROR					
LIFE	0.0-0.3				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25	1	1	1	
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION/HT: T7352  
 FORM: 3.00" TH FORGING  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 FREQUENCY: 6.00  
 ENVIRONMENT: R. T., L. H. A.

YIELD STRENGTH: 65.0 KSI  
 ULT. STRENGTH: 74.0 KSI  
 SPECIMEN THK: 0.998- 1.000"  
 SPECIMEN WIDTH: 7.400"  
 REFERENCES: 85837

ALUM.  
 ALLOY

7049

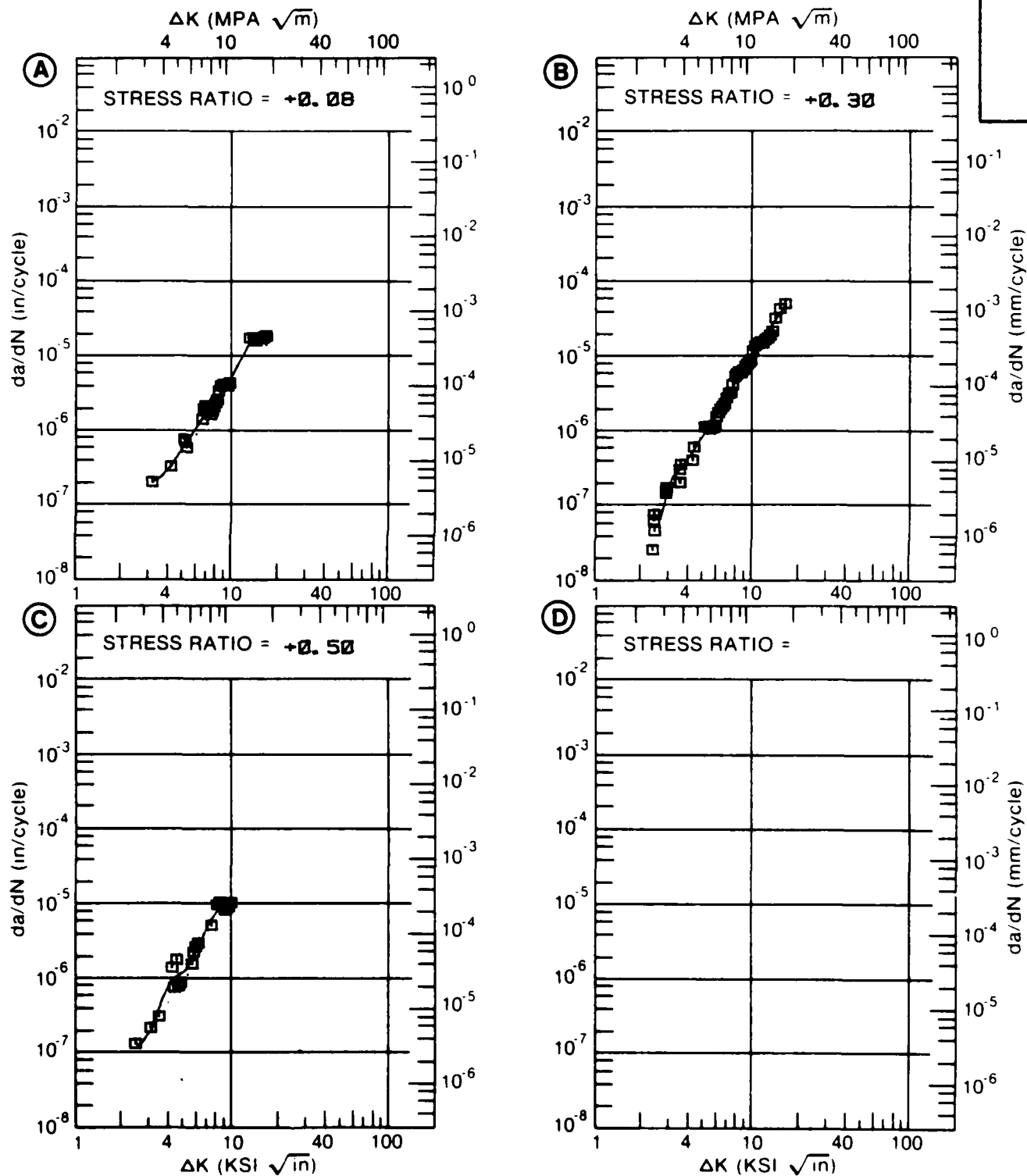


Figure 8.6.3.14

TABLE 8.6.3.15

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTORDATA ASSOCIATED WITH FIGURE 8.6.3.15 INDICATING EFFECT  
OF ENVIRONMENT

MATERIAL: ALUMINUM		7049			
CONDITION: T7352					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R. I. L. H. A. 6HZ	E= R. T. S. T. W. 1HZ		
DELTA K	A: 8.12	1.61			
MIN	B: 6.48		1.54		
	C:				
	D:				
	7.00		2.94		
	8.00		7.09		
	9.00	2.66	14.2		
	10.00	4.16	28.2		
	13.00	10.1			
	16.00	18.0			
	20.00	33.1			
DELTA K	A: 24.30	60.7			
MAX	B: 11.39		86.0		
	C:				
	D:				
ROOT MEAN SQUARE		6.86	15.34		
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25	2			
SUMMARY	1.25-2.0		1		
(NP/NA)	>2.0				

CONDITION/HT: T7352  
 FORM: 3.00" TH FORGING  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 STRESS RATIO: +0.08  
 FREQUENCY:

YIELD STRENGTH: 67.0 KSI  
 ULT. STRENGTH: 76.0 KSI  
 SPECIMEN THK: 0.250-1.000"  
 SPECIMEN WIDTH: 7.400"  
 REFERENCES: 88579

ALUM.  
 ALLOY

7049

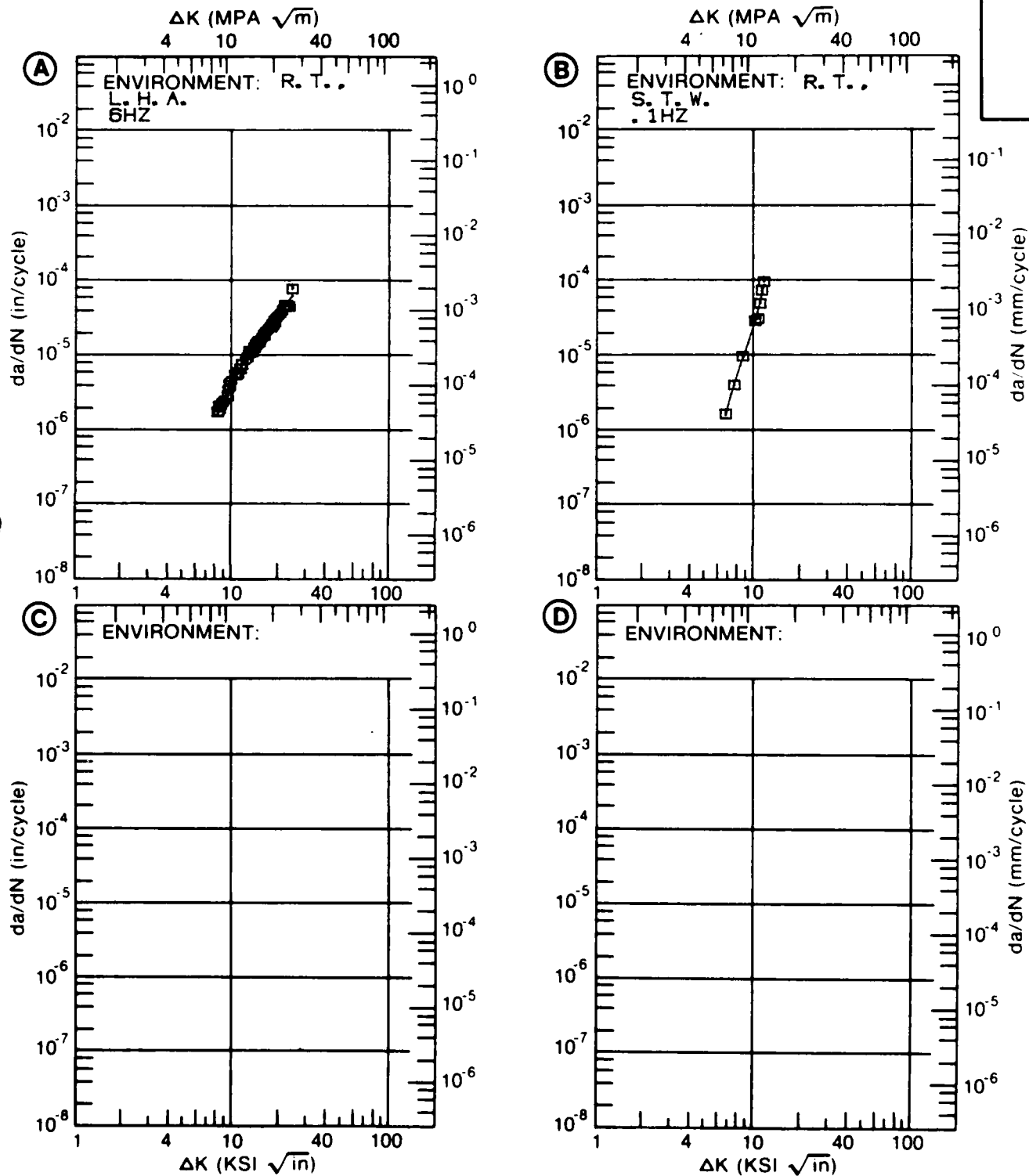


Figure 8.6.3.15

TABLE 8.6.3.16

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.6.3.16 INDICATING EFFECT

## OF ENVIRONMENT

MATERIAL: ALUMINUM		7049			
CONDITION: T7352					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R. T.	E= R. T.		
		L. H. A.	S. T. W.		
DELTA K A:					
MIN B:	6.47		1.52		
C:					
D:					
	7.00		2.66		
	8.00		5.52		
	9.00		9.01		
	10.00		13.0		
	13.00		32.9		
	16.00		100.		
DELTA K A:					
MAX B:	17.21		172.		
C:					
D:					
ROOT MEAN SQUARE		0.00	7.48		
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25		1		
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION/HT: T7352  
 FORM: 3.00" TH FORGING  
 SPECIMEN TYPE: CT  
 ORIENTATION: T-L  
 STRESS RATIO: +0.08  
 FREQUENCY:

YIELD STRENGTH: 64.0- 65.0 KSI  
 ULT. STRENGTH: 73.0- 74.0 KSI  
 SPECIMEN THK: 0.500- 0.990"  
 SPECIMEN WIDTH: 7.400"  
 REFERENCES: 85837, 88579

ALUM.  
 ALLOY

7049

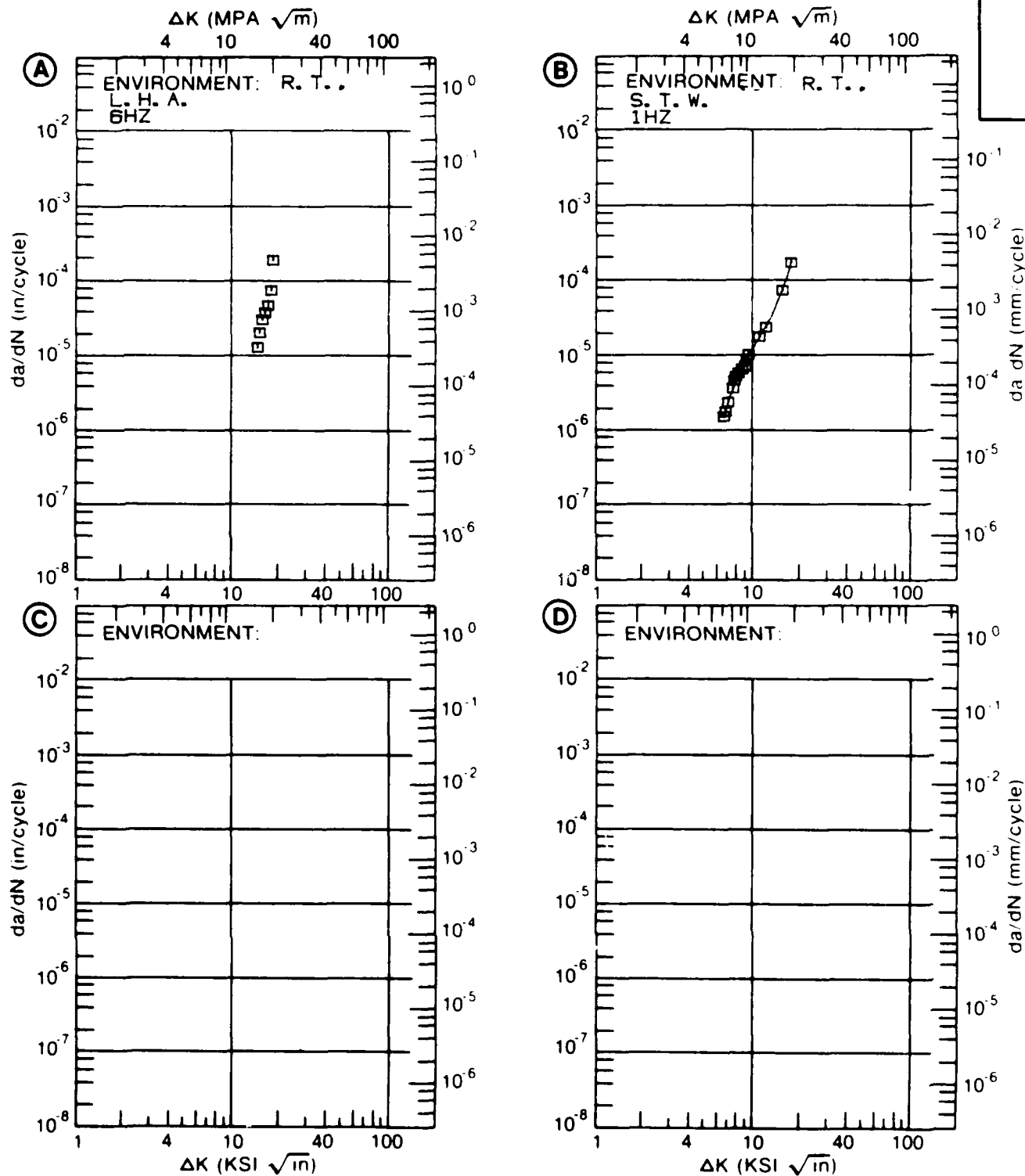


Figure 8.6.3.16



TABLE 8.6.3.17

SUSTAINED CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTORDATA ASSOCIATED WITH FIGURE 8.6.3.17 INDICATING EFFECT  
OF ENVIRONMENTMATERIAL: ALUMINUM  
CONDITION: T73

7049

K MAX  
(KSI\*IN\*\*1/2)

DA/DT (10\*\*-6 IN/HOUR)

A

B

C

D

E=  
WET 3X/DAY WITH  
3.5% NaClK MAX A:  
MIN B:  
C:  
D:

200.00

K MAX A:  
MAX B:  
C:  
D:ROOT MEAN SQUARE  
PERCENT ERROR

0.00

CONDITION/HT: T73  
 FORM: FORGING  
 SPECIMEN TYPE: DCB  
 ORIENTATION: S-L  
 YIELD STRENGTH:  
 ULT. STRENGTH:

SPECIMEN THK: 1.000"  
 SPECIMEN WIDTH: 5.000"  
 CRACK LENGTH ( $A_0$ ):  
 $K_{ISCC}$ :  
 REFERENCES: 84284

ALUM.  
 ALLOY

7049

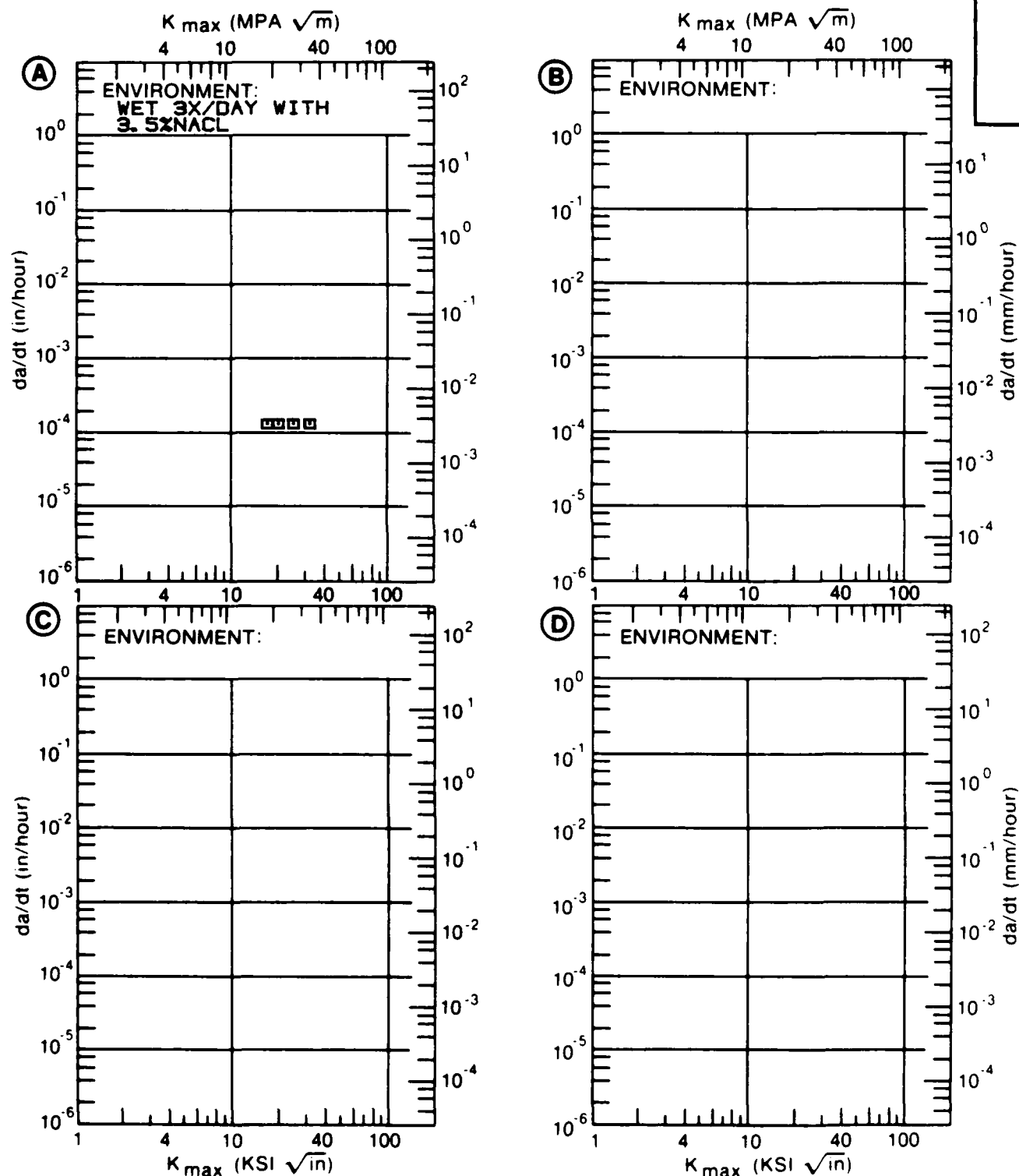


Figure 8.6.3.17

TABLE 8.6.3.18

CONDITION	ALUMINUM		YIELD STR (KSI)	TEST SPEC TEMP OR (F)	ENVIRONMENT	7049				K(IISCC)				STAN DEV	TEST TIME (MIN)	DATE REFER
	--PRODUCT-- FORM	THICK (IN)				SPECIMEN		WIDTH (IN)	THICK (IN)	DESIGN (**SQ)	CRACK LENGTH K(0) (IN) (KSI*SQRT IN)					
						A	B									
T73	F	----	R T S-L	68.9	3.5	PCT NACL	1.000	0.500	CT	----	20.50	19.80		>	60660	1972 83242
T73	E	3 25	R T L-B	73.4	3.5	PCT NACL	2.000	1.000	CT	----	33.20	20.40		>	21280	1972 83061
T73	E	3 25	R T S-L	65.4	3.5	PCT NACL	2.000	1.000	CT	----	23.00	20.30		>	19800	1972 83061
T73 INTEGRALLY STIFFENED	E	3 00	R T L-B	74.8	3.5	PCT NACL	2.000	1.000	CT	----	28.10	26.70		>	17130	1972 83061
T73 INTEGRALLY STIFFENED	E	3 00	R T S-L	68.6	3.5	PCT NACL	2.000	1.000	CT	----	20.30	19.40		>	40230	1972 83061
T7352	F	3 00	R T L-T	67.0	F.C.S.		5.500	1.000	DCB	----	41.00	> 27.50			76200	1976 R1006
T7352	F	3 00	R T L-T	67.0	S.C.S.		5.500	1.000	DCB	----	41.00	> 28.50			76140	1976 R1006
T7352	F	3 00	R T L-T	67.0	S.T.W.		5.500	1.000	DCB	----	41.00	> 25.50			76200	1976 R1006
T7352	F	3 00	R T L-T	67.0	S.T.W.		5.500	1.000	DCB	----	41.00	> 27.60			76200	1976 R1006
T7352	F	3 00	R T L-T	64.0	S.T.W.		5.500	1.000	DCB	----	41.00	21.00			133680	1976 R1006
T7352	F	3 00	R T L-T	64.0	S.T.W.		5.500	1.000	DCB	----	41.00	19.50			133680	1976 R1006
T7352	F	3 00	R T L-T	64.0	S.T.W.		5.500	1.000	DCB	----	41.00	> 21.50			133680	1976 R1006
T7352	F	3 00	R T L-T	64.0	S.T.W.		5.500	1.000	DCB	----	41.00	> 20.00			133680	1976 R1006
T7352	F	3 00	R T L-T	64.0	S.T.W.		5.500	1.000	DCB	----	41.00	19.00			133680	1976 R1006
T7352	F	3 00	R T S-L	62.0	S.T.W.		5.500	1.000	DCB	----	39.00	17.50		19 3/ 0 4	133680	1976 R1006
T7352	F	3 00	R T S-L	62.0	S.T.W.		5.500	1.000	DCB	----	39.00	> 17.50			133680	1976 R1006
T7352	F	3 00	R T S-L	62.0	S.T.W.		5.500	1.000	DCB	----	39.00	> 22.50			61680	1976 R1006
T7352	F	3 00	R T S-L	62.0	S.T.W.		5.500	1.000	DCB	----	39.00	17.00		17 3/ 0 4	133680	1976 R1006

TABLE 8.7.1.1

MEAN PLANE STRAIN FRACTURE TOUGHNESS DATA OF  
ALUMINUM ALLOY 7050 AT ROOM TEMPERATURE

CONDITION/HT	MEAN K <sub>IC</sub> ± STANDARD (KSI SQRT(IN)) DEVIATION		(NUMBER OF SPECIMENS)	
	PLATE			
	L-T	I-T	S-L	
T7351	34.8 ± 3.9 (31)	30.0 ± 2.6 (29)	28.0 ± 1.3 (30)	
T73651	31.9 ± 3.9 (86)	28.7 ± 4.7 (83)	23.5 ± 1.5 (35)	
T7451	30.8 ± 0.3 (3)	-----	-----	
FORGING				
	L-T	I-T	S-L	
T7456	-----	28.9 ± 3.9 (4)	-----	
T736	32.3 ± 2.3 (4)	23.4 ± 1.0 (4)	24.6 ± 0.6 (6)	
T73452	31.1 ± 2.5 (11)	20.7 ± 1.4 (13)	19.2 ± 1.4 (17)	
EXTRUDED BAR				
	L-T	I-T	S-L	
T73511 HIGH/ PURITY	36.2 ± 3.2 (2)	24.1 ± 0.2 (2)	-----	

TABLE 8.7.1.2

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR

ALUMINUM 7050

## TEST CONDITIONS

SPECIMEN  
ORIENTATION L TENVIRONMENT DRY AIR  
AT R T

CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQ (HZ)	DELTA K LEVELS (KSI SQRT IN)	FATIGUE CRACK GROWTH RATES (MICRO IN/CYCLE)			
				2 5	5	10	20	50 100
T7351	PLATE	0 33	2 00-20 00			6 92	62 1	
T736	FORGING	0 10	20 00				29 1	
T73651	PLATE	0 10	20 00			9 52		
T76	SHEET	0 03	13 30			14 0		
T7651	PLATE	0 10	20 00			9 43	41 0	

TABLE 8.7.1.3

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR

ALUMINUM 7050

## TEST CONDITIONS

SPECEIMEN ORIENTATION	L T	ENVIRONMENT	L H A AT R T	FATIGUE CRACK GROWTH RATES (MICRO IN/CYCLE)						
				DELTA K LEVELS (KSI SQRT(IN))	2	5	10	20	50	100
CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQ (HZ)							
17301X	FORGING	0.08	6.00					12.6		
173511	EXTRUSION	0.33	20.00			0.49	3.48			
173511	EXTRUSION	0.10	8.00-50.00			0.22	2.71	32.0		
173511	EXTRUSION	0.33	7.50-15.00			0.33	2.08			
173511	EXTRUSION	0.50	8.00-50.00		0.08	0.77	9.86			
173651	PLATE	0.08	6.00					2.61	26.0	
173651	PLATE	0.30	6.00			0.37	4.62			
173651	PLATE	0.33	18.10				2.39			
173651	PLATE	0.50	6.00				1.35			
173651X	EXTRUSION	0.33	30.00			0.50	3.49			
173651	EXTRUSION	0.33	18.10				3.45			
173651	EXTRUSION	0.33	18.30			0.41	3.95			
173651	EXTRUSION	0.46	18.30				4.90			

TABLE 8.7.1.4

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR

ALUMINUM 7050

TEST CONDITIONS

SPECIMEN ORIENTATION	L T	ENVIRONMENT	LAB AIR AT R T	FATIGUE CRACK GROWTH RATES						
				DELTA K LEVELS (KSI SQRT(IN))	2 5	5	10	20	50	100
CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQ (HZ)							
T73511-HIGH PURITY	EXTRUSION	0 10	30 00				5 93			
T735	FORGING	0 10	3 00-10 00				11 9	58 7		
T73651	PLATE	0 10	3 00-25 00			0 82	4 09	48 7		
T73651	PLATE	0 10	5 00-10 00				7 68	47 3		
T76	SHEET	0 00	13 30				7 60	40 1		
T76	SHEET	0 33	13 30				10 4	70 3		
T7651	PLATE	0 02	1 00-20 00			0 58	8 04	22 9		

TABLE 8.7.1.5  
FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR  
ALUMINUM 7050

TEST CONDITIONS		ENVIRONMENT		H H A.		FATIGUE CRACK GROWTH RATES					
SPECIMEN ORIENTATION	L-T			AT	R	T					
CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQ (HZ)	DELTA K LEVELS (KSI SQRT(IN))	2.5	5	10	20	50	100	
T7351	PLATE	0.10	2.00				6.79	42.1			
T7351X	EXTRUSION	0.33	20.00			1.21	15.9				
T73511	EXTRUSION	0.10	2.00				5.31	45.5	1663		
T73511	EXTRUSION	0.10	15.00			0.45	5.85				
T73511	EXTRUSION	0.10	10.00-20.00				5.16	45.5			
T73511	EXTRUSION	0.10	50.00			0.29					
T73511	EXTRUSION	0.33	15.00-20.00			0.63	8.94				
T73511	EXTRUSION	0.50	15.00-20.00		0.11	1.04	10.9				
T73511-HIGH PURITY	EXTRUSION	0.10	30.00				12.2				
T73651	PLATE	0.33	18.30				12.7				
T73651	PLATE	0.33	25.00		0.06	1.55	15.7	82.9			
T73651	PLATE	0.33	25.00			1.03	12.9	63.3			
T73651	EXTRUSION	0.10	2.00			0.33	5.81	49.0			



TABLE 8.7.1.5 (Con't)

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR

ALUMINUM 7050

## TEST CONDITIONS

SPECIMEN  
ORIENTATION L-TENVIRONMENT H.H.A.  
A.T.R.T

CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQ (HZ)	DELTA K LEVELS (KSI SQRT(IN))	FATIGUE CRACK GROWTH RATES (MICRO IN/CYCLE)				
				2.5	5	10	20	50	100
176	SHEET	0.33	13.30			26.7			
17651	PLATE	0.10	2.00			7.27	70.8		
17651	PLATE	0.10	20.00		0.33	9.75	52.1		
17651X	EXTRUSION	0.33	20.00		1.68	16.6			
176511	EXTRUSION	0.10	2.00			4.71	46.3	1946	
176511	EXTRUSION	0.10	20.00		0.15	4.47	46.8		
176511	EXTRUSION	0.33	18.30			16.8			
176511	EXTRUSION	0.33	18.30		0.79	15.4			

TABLE 8.7.1.6

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR

ALUMINUM 7050

TEST CONDITIONS

SPECIMEN  
ORIENTATION L-T

ENVIRONMENT S.T.W.  
A.T.R.T

CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQ (HZ)	DELTA K LEVELS (KSI SQRT(IN))	2	5	10	20	50	100
T7351	PLATE	0.33	2.00-20.00				20.4			
T73651	PLATE	0.10	1.00-10.00				1.12	17.5	79.3	

TABLE 8.7.1.7

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR

ALUMINUM 7050

TEST CONDITIONS

SPECIMEN  
ORIENTATION

L T

ENVIRONMENT

SIM SEA WATER  
AT R T

CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQ (HZ)	DELTA K LEVELS (KSI SQRT(IN))		FATIGUE CRACK GROWTH RATES (MICRO IN/CYCLE)			
				2 5	5	10	20	50	100
T73651	PLATE	0 10	1 00-10 00		1 49	18 2	164		
T7651	PLATE	0 02	1 00-20 00		10 6	64 2			

TABLE 8.7.1.8

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR

ALUMINUM 7050

TEST CONDITIONSSPECIMEN  
ORIENTATION

L-T

ENVIRONMENT: SALT FOG  
AT R.T.

CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQ (HZ)	DELTA K LEVELS: (KSI SQRT(IN))	FATIGUE CRACK GROWTH RATES (MICRO IN./CYCLE)					
					2.5	5	10	20	50	100
173651	PLATE	0.33	18.30				20.8			
176	SHEET	0.33	13.30				33.3			
176511	EXTRUSION	0.33	18.30				17.1			
176511	EXTRUSION	0.33	18.30				2.56	23.5		

TABLE 8.7.1.9

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR  
ALUMINUM 7050

## TEST CONDITIONS

SPECIMEN  
ORIENTATION T TENVIRONMENT DRY AIR  
AT R T

CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQ (HZ)	DELTA K LEVELS (KSI SQRT(IN))	FATIGUE CRACK GROWTH RATES (MICRO IN/CYCLE)				
				2 5	5	10	20	50	100
T7351	PLATE	0 33	1 50-20 00			8 65			
T73652	FORGING	0 33	18 30			8 91			
T76	SHEET	0 33	13 30		0 99	7 26			

TABLE 8.7.1.10

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR

ALUMINUM 7050

## TEST CONDITIONS

SPECIMEN ORIENTATION T L ENVIRONMENT L H A  
A T R T

CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQ (HZ)	DELTA K LEVELS (KSI SQRT(IN))	2	5	10	20	50	100
T6	SWIFT	0.33	13.30				11.9	114		
T7351X	EXTRUSION	0.33	20.00			1.06	7.69			
T7351X	EXTRUSION	0.33	20.00			0.86	9.90			
T73511	EXTRUSION	0.33	7.50-20.00			0.53	6.86			
T73511	EXTRUSION	0.50	10.00-40.00		0.06	0.32	6.54			
T73651	PLATE	0.08	6.00			0.24	2.87			
T73651	PLATE	0.33	18.30			0.52	6.75			
T73651	PLATE	0.33	18.30				12.0			
T7651X	EXTRUSION	0.33	20.00			0.88	5.65			
T76511	EXTRUSION	0.33	18.40			0.81	6.38			

TABLE 8.7.1.11

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR

ALUMINUM 7050

TEST CONDITIONS

SPECIMEN  
ORIENTATION T-L

ENVIRONMENT LAB AIR  
AT R T

CONDITION/H1	PRODUCT FORM	STRESS RATIO	FREQ (HZ)	DELTA K LEVELS (KSI SQRT(IN))	FATIGUE CRACK GROWTH RATES (MICRO IN/CYCLE)				
				2 5	5	10	20	50	100
T73511-HIGH PURITY	EXTRUSION	0 10	30 00			3 97			
T736	FORGING	0 10	10 00			6 75	101		
T73651	PLATE	0 10	1 00-10 00			8 45	49 4		

TABLE 8.7.1.12

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR

ALUMINUM 7050

## TEST CONDITIONS

SPECIMEN  
ORIENTATION T-L

ENVIRONMENT

H.H.A.  
A R T

CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQ (HZ)	DELTA K LEVELS (KSI SQRT(IN))	2.5	5	10	20	50	100
T6	SHEET	0.33	13.30				21.3	163		
T6	SHEET	0.33	13.30				20.8	220		
T7351	PLATE	0.33	1.50-20.00				11.2			
T7351X	EXTRUSION	0.33	20.00			2.25	18.4			
T7351X	EXTRUSION	0.33	20.00			1.41	16.6			
T73511	EXTRUSION	0.33	7.50-20.00			0.85	12.4			
T73511	EXTRUSION	0.50	10.00-40.00		0.06	0.76	17.9			
T73651	PLATE	0.33	18.30			0.94	15.5			
T73651	PLATE	0.33	18.30				15.3			
T73652	FORGING	0.33	18.30				16.3			



TABLE 8.7.1.12 (Con't)

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR

ALUMINUM 7050

TEST CONDITIONS

SPECIMEN

ORIENTATION

T 1

ENVIRONMENT  
H H A  
A R T

CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQ (Hz)	DELTA K LEVELS (KSI SQRT(IN))	FATIGUE CRACK GROWTH RATES (INCH) IN (CYCLE)	5	1	20	50	100
T76	SHEET	0.33	13.30		1.6					
T76S1X	EXTRUSION	0.33	20.00		2.05	1.0				
T76S11	PLATE	0.33	18.30		1.7					
T76S11	EXTRUSION	0.33	18.30		2.5					

TABLE 8.7.1.13

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR

ALUMINUM 7050

TEST CONDITIONS

SPECIMEN ORIENTATION T L ENVIRONMENT S T W A T R I

CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQ (HZ)	DELTA K LEVELS (KSI SQRT(IN))	FATIGUE CRACK GROWTH RATES (MICRO IN./CYCLE)				
				2 5	5	10	20	50	100
T7351	PLATE	0 33	1 50-20 00		1 72	21 0			
T73651	PLATE	0 08	1 00			13 3			
T73651	PLATE	0 10	1 00-10 00		1 16	15 9	97 1		

TABLE 8.7.1.14

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR

ALUMINUM 7050

## TEST CONDITIONS

SPECIMEN  
ORIENTATION T LENVIRONMENT SALT FOG  
AT R T

CONDITION/HI	PRODUCT FORM	STRESS RATIO	FREQ (HZ)	DELTA K LEVELS (KSI SQRT(IN))	FATIGUE CRACK GROWTH RATES (MICRO IN/CYCLE)				
				2	5	10	20	50	100
I73651	PLATE	0.03	18.30			13.1			
I73651	PLATE	0.03	18.30			18.4			
I73651	PLATE	0.03	18.30			28.5			
I73652	FORGING	0.03	18.30			31.4			
I76	SHEET	0.03	13.30			23.2			
I76511	EXTRUSION	0.03	18.30			26.7			

TABLE 8.7.1.15

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR

ALUMINUM 7050

TEST CONDITIONS

SPECIMEN  
ORIENTATION S L

ENVIRONMENT L H A  
A T R I

CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQ (HZ)	DELTA K LEVELS (KSI SQRT(IN))	FATIGUE CRACK GROWTH RATES (MICRO IN/CYCLE)					
					2.5	5	10	20	50	100

173651	PLATE	0.33	18.30				5.27			
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176511	EXTRUSION	0.33	18.30				43.9			
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TABLE 8.7.1.16

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR

ALUMINUM 7050

TEST CONDITIONS

SPECIMEN  
ORIENTATION S-L

ENVIRONMENT H H A  
A T R T

CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQ (HZ)	DELTA K LEVELS (KSI SQRT(IN))	2	5	10	20	50	100
17351	PLATE	0.33	1 00-20 00				11.9			
173651	PLATE	0.33	18 30				14.9			
176511	EXTRUSION	0.33	18 30				1.71	1.21		

TABLE 8.7.1.17

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR

ALUMINUM 7050

TEST CONDITIONS		ENVIRONMENT		SALT FOG					
ORIENTATION	SOL	ENVIRONMENT		SALT FOG					
ORIENTATION	PRODUCT FORM	STRESS RATIO	PERIOD (H)	DELTA K LEVELS (KSI 50RT(IN))	FATIGUE CRACK GROWTH RATES (MICR/IN/CYCLE)				
				2.5	5	10	20	50	100
TENSILE	PLATE	0.13	18.30						
TENSILE	EXTRUSION	0.33	18.30						

TABLE 8.7.2.1

CONDITION	ALUMINUM			YIELD (KSI)	TEST SPECIMEN ORIENT	THICK (IN)	TEMP (F)	7050			K (IC)	K (IC)				DATE	REFER	
	--PRODUCT-- FORM	THICK (IN)	STRENGTH					-----SPECIMEN-----				CRACK LENGTH (IN)	2.5* (IN)	K (IC) TVS)*2 (KBI*SQRT IN)	K (IC) MEAN (KBI*SQRT IN)			STAN DEV
								W	B	DESIGN								
T7E56	F	5.00	R. T.	T-L	1.500	0.750	NB	0.837	0.39	24.60			1972	85291				
		5.00			1.500	0.751	NB	0.863	0.57	29.80			1972	85291				
		5.00			1.500	0.750	NB	0.875	0.74	33.80			1972	85291				
		5.00			1.500	0.751	NB	0.837	0.48	27.20	28.9 / 3.9		1972	85291				
T7351	P	6.00	R. T.	L-T	4.000	2.000	CT	2.060	0.77	33.60			1977	AL001				
		2.00			4.000	2.000	CT	2.010	1.27	43.00			1977	AL001				
		6.00			4.000	2.000	CT	2.040	0.77	33.50			1977	AL001				
		2.00			4.000	2.000	CT	2.010	1.18	41.50			1977	AL001				
		2.00			4.000	2.000	CT	2.020	1.29	43.40			1977	AL001				
		6.00			4.000	2.000	CT	2.050	0.77	33.60			1977	AL001				
		2.00			4.000	2.000	CT	2.030	1.03	39.30			1977	AL001				
		2.00			4.000	2.000	CT	2.020	1.04	39.50			1977	AL001				
		2.00			4.000	2.000	CT	2.030	1.03	39.30			1977	AL001				
		6.00			4.000	2.000	CT	2.020	0.53	28.60			1977	AL001				
		6.00			4.000	2.000	CT	2.040	0.54	28.90			1977	AL001				
		6.00			4.000	2.000	CT	2.010	0.55	29.10			1977	AL001				
		5.12			4.000	2.000	CT	2.000	0.55	29.70			1977	AL001				
		5.12			4.000	1.980	CT	2.000	0.54	29.30			1977	AL001				
		5.12			4.000	2.000	CT	2.000	0.54	29.30			1977	AL001				
		5.00			4.000	2.000	CT	2.060	0.72	34.30			1977	AL001				
		3.00			3.000	1.500	CT	1.560	0.75	34.80			1977	AL001				
		3.00			3.000	1.500	CT	1.560	0.72	34.30			1977	AL001				
		4.00			4.000	2.000	CT	2.090	0.82	36.40			1977	AL001				
		4.00			4.000	2.000	CT	2.050	0.71	34.00			1977	AL001				
		4.00			4.000	2.000	CT	2.060	0.72	34.20			1977	AL001				
		5.00			4.000	2.000	CT	2.030	0.69	33.40			1977	AL001				
		5.00			4.000	2.000	CT	2.050	0.68	33.30			1977	AL001				
		4.00			4.000	2.000	CT	2.050	0.78	35.50			1977	AL001				
		4.00			4.000	2.000	CT	2.080	0.72	34.30			1977	AL001				
		3.00			3.000	1.500	CT	1.560	0.75	35.00			1977	AL001				
		4.00			4.000	2.000	CT	2.060	0.82	36.50			1977	AL001				
		3.00			3.000	1.500	CT	1.570	0.75	35.10			1977	AL001				
		1.00			3.000	1.500	CT	1.570	0.79	35.90			1977	AL001				
		3.00			3.000	1.500	CT	1.570	0.73	34.50			1977	AL001				
1.00			69.8	2.000	1.004	CT	1.000	0.70	36.90	34.8 / 3.9		1974	88186					

TABLE 8.7.2.1 (Con't)

CONDITION	ALUMINUM				7050		K(1C)		K(1C) STAN DEV	DATE	REFER		
	---PRODUCT--		YIELD (KSI)	TEST SPECIMEN ORIENT	-----SPECIMEN-----		CRACK LENGTH (IN)	2.5* (IN)					
	FORM	THICK (IN)			THICK (IN)	WIDTH (IN)						DESIGN	
T7351	P	6.00	R. T.	T-L	59.1	4.000	2.000	CT	2.080	0.63	29.60	1977	AL001
		6.00			59.1	4.000	2.000	CT	2.090	0.66	30.30	1977	AL001
		6.00			59.1	4.000	2.000	CT	2.070	0.64	29.80	1977	AL001
		2.00			60.4	4.000	2.000	CT	2.060	0.82	34.50	1977	AL001
		2.00			60.4	4.000	2.000	CT	2.070	0.82	34.60	1977	AL001
		2.00			60.4	4.000	2.000	CT	2.060	0.87	35.60	1977	AL001
		6.00			60.9	4.000	2.000	CT	2.050	0.47	26.30	1977	AL001
		6.00			60.9	4.000	2.000	CT	2.080	0.48	26.60	1977	AL001
		2.00			60.9	4.000	2.000	CT	2.070	0.71	32.40	1977	AL001
		2.00			60.9	4.000	2.000	CT	2.070	0.72	32.60	1977	AL001
		2.00			60.9	4.000	2.000	CT	2.050	0.70	32.20	1977	AL001
		6.00			60.9	4.000	2.000	CT	2.050	0.48	26.70	1977	AL001
		5.12			61.4	4.000	2.000	CT	2.020	0.41	24.90	1977	AL001
		5.12			61.4	4.000	2.000	CT	2.050	0.41	25.00	1977	AL001
		4.00			63.4	4.000	2.000	CT	2.080	0.54	29.40	1977	AL001
		4.00			63.4	4.000	2.000	CT	2.090	0.57	30.80	1977	AL001
		4.00			63.4	4.000	2.000	CT	2.100	0.58	30.50	1977	AL001
		4.00			63.4	4.000	2.000	CT	2.040	0.54	29.40	1977	AL001
		4.00			63.4	4.000	2.000	CT	2.090	0.51	28.60	1977	AL001
		4.00			63.4	4.000	2.000	CT	2.100	0.58	30.60	1977	AL001
T7351	P	5.00			63.7	4.000	2.000	CT	2.110	0.54	29.70	1977	AL001
		5.00			63.7	4.000	2.000	CT	2.120	0.53	29.40	1977	AL001
		3.00			63.7	3.000	1.500	CT	1.580	0.55	30.00	1977	AL001
		3.00			63.7	3.000	1.500	CT	1.580	0.55	29.90	1977	AL001
		3.00			63.7	3.000	1.500	CT	1.560	0.57	30.30	1977	AL001
		5.00			63.7	4.000	2.000	CT	2.100	0.53	29.40	1977	AL001
		3.00			64.2	3.000	1.500	CT	1.590	0.55	30.10	1977	AL001
		3.00			64.2	3.000	1.500	CT	1.590	0.56	30.40	1977	AL001
		3.00			64.2	3.000	1.500	CT	1.600	0.57	30.60	1977	AL001
		2.00	R. T.	S-L	55.3	1.500	0.750	CT	0.770	0.73	29.90	1977	AL001
		2.00			55.3	1.500	0.750	CT	0.770	0.68	28.80	1977	AL001
		2.00			55.3	1.500	0.750	CT	0.770	0.73	29.90	1977	AL001
2.00			55.6	1.500	0.750	CT	0.770	0.61	27.50	1977	AL001		
2.00			55.6	1.500	0.750	CT	0.770	0.55	26.00	1977	AL001		
2.00			55.6	1.500	0.750	CT	0.780	0.62	27.70	1977	AL001		
6.00			56.3	3.000	1.500	CT	1.510	0.69	29.50	1977	AL001		
6.00			56.3	3.000	1.500	CT	1.520	0.70	29.70	1977	AL001		
6.00			56.3	3.000	1.500	CT	1.520	0.66	28.90	1977	AL001		



TABLE 8.7.2.1 (Con't)

CONDITION	ALUMINUM		7050		K (IC)		YIELD STRENGTH (KSI)	SPECIMEN		TEST TEMP (F)	SPECIMEN ORIENT	THICK (IN)	PRODUCT-- FORM	DATE	REFER					
	THICK (IN)	YIELD	WIDTH (IN)	THICK (IN)	DESIGN	CRACK LENGTH (IN)		2.5* (K(IC)/TYS)**2 (IN)	K(IC) MEAN DEV (KSI*SQRT IN)											
17351	P	6.00	58.1	3.000	1.500	CT	1.950	0.53	26.80					1977	AL001					
		6.00	58.1	3.000	1.500	CT	1.530	0.50	26.10					1977	AL001					
		6.00	58.1	3.000	1.500	CT	1.540	0.53	26.70					1977	AL001					
		5.12	58.6	3.000	1.500	CT	1.500	0.47	25.50					1977	AL001					
		5.12	58.6	3.000	1.500	CT	1.520	0.50	26.20					1977	AL001					
		5.12	58.6	3.000	1.500	CT	1.530	0.49	26.00					1977	AL001					
		5.00	58.8	3.000	1.500	CT	1.540	0.60	28.90					1977	AL001					
		5.00	58.8	3.000	1.500	CT	1.520	0.58	28.20					1977	AL001					
		5.00	58.8	3.000	1.500	CT	1.530	0.56	27.90					1977	AL001					
		4.00	59.0	3.000	1.500	CT	1.530	0.58	28.50					1977	AL001					
		4.00	59.0	3.000	1.500	CT	1.530	0.55	27.70					1977	AL001					
		4.00	59.0	3.000	1.500	CT	1.530	0.62	29.40					1977	AL001					
17351-HIGH/PURITY	E8	4.00	60.0	3.000	1.500	CT	1.540	0.59	29.20					1977	AL001					
		4.00	60.0	3.000	1.500	CT	1.530	0.59	29.10					1977	AL001					
		4.00	60.0	3.000	1.500	CT	1.540	0.58	28.90					1977	AL001					
		3.00	60.1	2.500	1.250	CT	1.280	0.51	27.20					1977	AL001					
		3.00	60.1	2.500	1.250	CT	1.280	0.50	27.00					1977	AL001					
		3.00	60.1	2.500	1.250	CT	1.270	0.53	27.80					1977	AL001					
		3.00	61.4	2.500	1.250	CT	1.270	0.53	28.30					1977	AL001					
		3.00	61.4	2.500	1.250	CT	1.270	0.48	27.00					1977	AL001					
		3.00	61.4	2.500	1.250	CT	1.280	0.53	28.40	28.0/	1.3			1977	AL001					
		17352	F	5.00	64.0	3.000	1.502	CT	1.510	0.63	32.00					1973	86213			
				5.00	62.1	3.000	1.502	CT	1.580	0.22	18.50					1973	86213			
				5.00	62.1	3.000	1.502	CT	1.588	0.21	18.00	18.3/	0.4			1973	86213			
6.00	62.4			4.000	2.000	CT	2.148	0.25	19.80					1973	86213					
17352-HIGH/PURITY	E8			1.50	72.1	2.500	1.250	CT	----	0.71	38.40					1980	WA001			
				1.50	72.1	2.500	1.250	CT	----	0.55	33.90	36.2/	3.2			1980	WA001			
				1.50	66.6	2.500	1.250	CT	----	0.33	24.20					1980	WA001			
				1.50	66.6	2.500	1.250	CT	----	0.32	23.90	24.1/	0.2			1980	WA001			
				17352	F	5.00	82	82	L-T	L-T										
						5.00	82	82	T-L	T-L										
						5.00	82	82	T-L	T-L										
						5.00	82	82	T-L	T-L										
		5.00	82			82	T-L	T-L												
		5.00	82			82	T-L	T-L												
		5.00	82			82	T-L	T-L												
		5.00	82			82	T-L	T-L												
5.00	82	82	T-L			T-L														
5.00	82	82	T-L			T-L														
5.00	82	82	T-L			T-L														

TABLE 8.7.2.1 (Con't)

CONDITION	ALUMINUM				7050		K(1C)		DATE	REFER	
	--PRODUCT-- FORM	THICK (IN)	TEST SPECIMEN ORIENT	YIELD STRENGTH (KSI)	-----SPECIMEN-----		CRACK LENGTH (IN)	2.5* (K(1C)/TVB)**2 (IN)			
					WIDTH (IN)	THICK (IN)					DESIGN
			(F)		M	B	A				
T7352	F	5.00	82	59.0	3.000	1.501	CT	1.574	0.34	21.90	1973 86213
		5.00		59.0	3.000	1.502	CT	1.578	0.34	21.90	1973 86213
T736	F	3.00	R.T.	63.6	1.996	1.000	CT	1.047	0.58	30.79	1976 NC001
		3.00		63.6	1.998	1.001	CT	1.054	0.62	31.70	1976 NC001
		3.00		63.6	2.001	1.001	CT	1.049	0.59	31.11	1976 NC001
		----		69.0	1.400	0.696	CT	0.674	0.66	39.70	1973 R9880
T736	F	6.00	82	61.9	3.000	1.499	CT	1.608	1.27	44.10	1973 86213
		7.10		63.5	2.000	0.999	CT	0.982	0.47	27.60	1973 86213
		7.10		65.1	2.000	1.001	CT	1.015	0.79	36.60	1973 86213
		4.25		69.3	3.000	1.499	CT	1.617	0.78	38.70	1973 86213
T736	F	6.00	R.T.	61.4	4.000	1.506	CT	----	0.35	22.90	1973 91123
		3.00		62.2	2.003	1.001	CT	1.082	0.39	24.82	1976 NC001
		3.00		62.2	2.001	0.999	CT	1.054	0.35	23.44	1976 NC001
		3.00		62.2	1.996	0.999	CT	1.042	0.32	22.40	1976 NC001
T736	F	6.00	82	66.6	0.990	0.499	CT	0.912	0.22	19.70	1973 86213
T736	F	3.00	R.T.	61.2	2.000	1.000	CT	1.050	0.35	23.08	1976 NC001
		3.00		61.2	2.002	1.000	CT	1.060	0.41	24.84	1976 NC001
		3.00		61.2	1.999	1.000	CT	1.070	0.41	24.90	1976 NC001
T736	F	6.00	R.T.	62.4	4.000	1.509	CT	----	0.79	24.60	1973 91123
		6.00		62.4	----	2.000	CT	1.930	0.41	25.30	1973 86212
		6.00		62.4	4.000	1.509	CT	----	0.37	24.00	1973 91123
		6.00		62.4	----	2.000	CT	1.980	0.39	24.60	1973 86212
		6.00		62.4	4.000	1.509	CT	----	0.41	25.30	1973 91123
		6.00		62.4	----	2.000	CT	1.950	0.37	24.00	1973 86212
T736	F	7.10	82	63.4	2.000	0.999	CT	1.020	0.28	21.20	1973 86213
		7.10		63.4	2.000	0.999	CT	1.012	0.27	20.90	1973 86213
		7.10		64.2	2.000	0.999	CT	0.996	0.27	21.10	1973 86213
		6.00		64.2	2.000	0.999	CT	1.058	0.44	26.80	1973 86213
		6.00		64.2	2.000	1.000	CT	1.051	0.42	26.20	1973 86213
		0.60		64.5	1.500	0.635	CT	0.763	0.28	21.50	1973 86213

TABLE 8.7:2.1 (Con't)

CONDITION	--PRODUCT--			TEST	SPECIMEN ORIENT	YIELD STRENGTH (KSI)	ALUMINUM			7050			K(1C)			K(1C) STAN	DATE	REFER
	FORM	THICK (IN)	TEMP (F)				WIDTH (IN)	THICK (IN)	DESIGN	CRACK LENGTH (IN)	2.5* (IN)	K(1C)**2 (KSI*SQRT IN)	K(1C) MEAN	DEV				
T736	F	----	R T	C-L	68.5	1.350	0.702	CT	0.687	0.47	29.80	0.5	1973	89880				
		68.5			1.400	0.699	CT	0.693	0.49	30.50	30.2/	0.5	1973	89880				
T73651	P	1.00	65	L-T	75.7	2.000	1.005	CT	1.030	0.53	34.90	0.2	1974	88174				
		1.00			75.7	2.000	1.003	CT	1.039	0.54	35.20	35.1/	0.2	1974	88174			
T73651	P	1.00	0	L-T	73.4	2.000	1.005	CT	1.028	0.61	36.40	1.1	1974	88174				
		1.00			73.4	1.990	1.003	CT	1.040	0.67	38.00	37.2/	1.1	1974	88174			
T73651	P	5.25	R T	L-T	58.9	1.998	1.001	CT	0.992	0.71	31.40		1977	RA010				
		5.25			59.3	2.000	0.999	CT	0.963	0.67	30.90		1977	RA010				
		5.00			60.3	4.000	2.010	CT	2.040	0.57	28.70		1975	AL015				
		5.00			60.3	4.000	2.010	CT	2.050	0.57	28.90		1975	AL015				
		6.00			61.0	2.000	1.001	CT	0.972	0.57	29.20		1977	RA009				
		4.50			61.2	2.003	1.001	CT	0.962	0.57	29.29		1977	RA010				
		5.25			61.3	1.999	1.000	CT	0.935	0.57	29.40		1977	RA010				
		6.00			61.6	2.000	1.000	CT	0.966	0.76	34.00		1977	RA009				
		6.00			61.7	1.997	0.999	CT	1.006	0.59	30.10		1977	RA009				
		6.00			61.7	2.000	0.999	CT	0.962	0.59	30.10		1977	RA009				
		5.25			62.0	1.999	0.997	CT	0.948	0.56	29.40		1977	RA010				
		5.25			62.0	1.999	1.000	CT	0.950	0.60	30.40		1977	RA010				
		6.00			62.2	1.998	0.998	CT	1.015	0.52	28.50		1977	RA009				
		5.25			62.2	2.000	0.998	CT	0.993	0.55	29.29		1977	RA010				
		5.25			62.5	2.003	0.999	CT	0.980	0.59	29.40		1977	RA010				
		6.00			62.7	1.997	1.000	CT	0.959	0.50	28.20		1977	RA009				
T73651	P	6.00	62.7	1.999	1.001	CT	0.981	0.51	28.40		1977	RA009						
		4.50	62.9	2.999	1.502	CT	1.492	0.67	32.99		1978	RA008						
		5.25	63.1	1.998	0.999	CT	0.973	0.54	29.40		1977	RA010						
		6.00	63.3	2.001	1.000	CT	0.963	0.57	29.40		1977	RA010						
		6.00	63.4	1.998	1.001	CT	0.964	0.48	28.00		1977	RA009						
		5.25	63.5	1.999	0.997	CT	0.993	0.54	29.70		1977	RA010						
		6.00	63.6	2.001	1.001	CT	0.979	0.50	28.60		1977	RA010						
		4.50	63.6	3.002	1.499	CT	1.530	0.54	29.70		1978	RA008						
		5.00	63.7	4.000	2.000	CT	2.090	0.41	25.70		1975	AL015						
		5.00	63.7	4.000	2.000	CT	2.080	0.40	25.50		1975	AL015						
		6.00	63.8	2.000	1.000	CT	0.975	0.76	35.30		1977	RA009						

TABLE 8.7.2.1 (Con't)

CONDITION	ALUMINUM				7050		K(1C)		2.5* (IN)	K(1C) MEAN (KSI*SQRT IN)	STAN DEV (IN)	DATE	REFER
	---PRODUCT--- FORM	THICK (IN)	TEST TEMP (F)	SPECIMEN ORIENT	YIELD STRENGTH (KSI)	-----SPECIMEN----- WIDTH THICK DESIGN (IN) (IN)		CRACK LENGTH (IN)					
						W	B						
T73691	P	5.25	R. T.	L-T	63.8	1.999	0.999	CT	0.972	0.53	29.40	1977	RA010
	6.00	63.8	1.999	1.001	CT	0.971	0.48	28.20	1977	RA009			
	5.25	63.9	1.999	1.000	CT	0.956	0.48	28.10	1977	RA010			
	4.50	63.9	2.999	1.498	CT	1.531	0.46	27.50	1978	RA008			
	2.75	63.9	2.003	0.999	CT	1.000	0.53	29.60	1977	RA010			
	5.25	64.0	2.003	1.000	CT	0.965	0.49	28.60	1977	RA010			
	4.00	64.2	1.999	1.001	CT	1.008	0.46	27.79	1977	RA010			
	4.00	64.4	1.998	0.997	CT	1.052	0.80	36.59	1977	RA009			
	4.00	64.7	1.998	1.001	CT	1.010	0.57	31.10	1977	RA009			
	4.00	65.0	3.000	1.502	CT	1.543	0.59	30.40	1973	89836			
	4.00	65.0	3.000	1.499	CT	1.569	0.41	26.30	1973	89836			
	4.00	65.4	1.998	0.997	CT	0.980	0.78	36.70	1977	RA009			
	6.00	65.4	2.000	1.001	CT	1.040	0.60	32.30	1977	RA009			
	4.00	65.9	1.998	0.998	CT	1.001	0.59	32.09	1977	RA009			
	3.00	66.9	2.000	1.000	CT	1.018	0.42	27.30	1973	86429			
	3.00	66.9	1.990	1.000	CT	1.014	0.44	28.20	1973	86429			
	3.00	66.9	2.010	1.000	CT	1.010	0.38	26.10	1973	86429			
	4.00	67.2	1.998	0.977	CT	1.091	0.54	31.50	1977	RA009			
	4.00	67.2	2.490	1.248	CT	1.234	0.64	34.20	1972	84363			
	4.00	67.2	2.490	1.255	CT	1.264	0.67	35.00	1972	84363			
	4.00	67.2	1.998	0.998	CT	1.003	0.73	36.50	1977	RA009			
	4.00	67.2	2.490	1.250	CT	1.279	0.74	36.80	1972	84363			
	3.50	67.4	3.001	1.500	CT	1.459	0.59	33.00	1978	RA008			
	3.50	67.8	3.000	1.496	CT	1.455	0.46	29.20	1978	RA008			
4.00	67.8	1.997	0.996	CT	1.009	0.51	30.79	1977	RA009				
2.00	67.8	1.998	0.994	CT	0.998	0.59	33.09	1977	RA009				
3.50	68.3	1.997	0.998	CT	1.091	0.63	34.50	1977	RA009				
3.50	68.5	1.998	0.997	CT	1.042	0.56	32.70	1977	RA009				
6.00	68.6	2.001	1.001	CT	0.941	0.58	33.09	1977	RA009				
3.15	69.0	2.001	1.007	CT	1.009	0.34	25.80	1976	NC001				
3.15	69.0	2.002	1.007	CT	0.993	0.34	25.72	1976	NC001				
2.50	69.0	2.002	1.007	CT	1.005	0.34	25.54	1976	NC001				
69.1	69.1	2.000	0.999	CT	1.027	0.45	29.60	1978	RA010				
69.6	69.6	2.003	1.001	CT	0.958	0.65	35.70	1977	RA010				
70.0	70.0	2.000	1.004	CT	1.034	0.69	36.80	1974	88174				
70.0	70.0	2.000	0.976	CT	1.034	0.66	36.00	1982	NC003				
70.0	70.0	2.000	1.003	CT	1.027	0.71	37.40	1974	88174				
70.0	70.0	2.000	1.003	CT	1.035	0.65	35.70	1974	88174				
70.0	70.0	2.000	0.976	CT	1.035	0.66	36.00	1982	NC003				



TABLE 8.7.2.1 (Con't)

CONDITION	ALUMINUM					7050		K(1C)		K(1C) STAN			DATE	REFER
	--PRODUCT-- FORM	THICK (IN)	TEST TEMP (F)	SPECIMEN ORIENT	YIELD STRENGTH (KSI)	-----SPECIMEN-----		CRACK LENGTH (IN)	2.5* (IN)	K(1C) MEAN (KSI*SQRT IN)	DEV			
						WIDTH (IN)	THICK (IN)					DESIGN		
T73651	P	1.00	0	T-L	72.7	2.000	1.004	CT	1.024	0.46	31.30		1974	8B174
		1.00			72.7	2.000	1.004	CT	1.028	0.46	31.20		1974	8B174
		1.00			72.7	2.000	1.007	CT	1.030	0.46	31.20	31.3/ 0.2	1974	8B174
T73651	P	5.25	R.T.	T-L	59.0	1.999	1.001	CT	0.969	0.40	23.60		1977	RA010
		5.00			59.1	4.000	2.010	CT	2.130	0.47	25.70		1975	AL015
		5.00			59.1	4.000	2.000	CT	2.100	0.43	24.50		1975	AL015
		4.50			59.2	1.999	1.002	CT	0.983	0.59	28.90		1977	RA010
		5.25			59.9	2.000	0.998	CT	0.970	0.35	22.50		1977	RA010
		5.00			60.1	4.000	2.000	CT	2.130	0.41	24.40		1975	AL015
		6.00			60.1	2.002	1.002	CT	0.986	0.59	29.40		1977	RA009
		5.00			60.1	4.000	2.010	CT	2.080	0.43	24.50		1975	AL015
		5.25			60.2	2.003	1.000	CT	1.001	0.36	23.00		1977	RA010
		6.00			60.4	1.998	1.001	CT	1.018	0.56	28.60		1977	RA009
		5.25			60.5	1.999	0.999	CT	0.997	0.34	22.40		1977	RA010
		6.00			60.5	1.998	0.999	CT	1.030	0.55	28.50		1977	RA009
		6.00			60.6	1.997	0.999	CT	0.991	0.46	26.20		1977	RA009
		6.00			60.7	2.001	1.001	CT	0.979	0.54	28.40		1977	RA009
		5.25			61.1	1.999	0.998	CT	0.996	0.33	22.20		1977	RA010
		6.00			61.1	1.998	1.000	CT	1.027	0.53	28.10		1977	RA009
		6.00			61.4	1.999	1.000	CT	0.988	0.71	32.80		1977	RA009
		5.25			61.4	2.003	1.000	CT	1.015	0.43	25.70		1977	RA010
		5.25			61.6	2.000	1.000	CT	0.996	0.33	22.70		1977	RA010
		4.50			61.7	3.000	1.500	CT	1.483	0.77	34.30		1978	RA008
		6.00			61.8	2.000	1.000	CT	0.968	0.50	27.70		1977	RA009
		4.00			61.8	1.998	0.997	CT	1.006	0.60	30.29		1977	RA009
		6.00			61.8	2.000	1.001	CT	0.987	0.50	27.79		1977	RA009
		4.00			62.0	1.998	0.998	CT	0.994	0.57	29.70		1977	RA009
		5.25			62.1	2.000	1.000	CT	1.001	0.39	23.50		1977	RA010
		5.25			62.3	2.003	1.000	CT	0.997	0.39	24.70		1977	RA010
		5.25			62.4	2.001	0.999	CT	0.994	0.31	22.20		1977	RA010
		5.25			62.5	2.003	1.002	CT	1.006	0.30	22.00		1977	RA010
		4.00			62.6	1.998	0.998	CT	0.990	0.48	27.50		1977	RA009
		6.00			62.7	1.999	1.001	CT	0.968	0.50	28.20		1977	RA009
		6.00			62.7	2.001	1.001	CT	0.971	0.48	27.60		1977	RA009
		6.00			62.9	2.002	1.001	CT	0.955	0.49	27.90		1977	RA009
		4.00			62.9	1.999	1.000	CT	1.049	0.33	22.90		1977	RA010
		4.00			62.9	1.999	1.000	CT	1.049	0.33	22.90		1977	RA010
		4.00			63.2	1.997	1.000	CT	1.007	0.50	28.29		1977	RA009

TABLE 8.7.2.1 (Con't)

CONDITION	ALUMINUM				7050		K(1C)		K(1C) STAN DEV	DATE	REFER		
	--PRODUCT--		YIELD STRENGTH (KSI)	-----SPECIMEN-----		CRACK LENGTH (IN)	2.5* K(1C)/(TVS)**2 (IN)						
	FORM	THICK (IN)		TEST TEMP (F)	SPECIMEN ORIENT			WIDTH (IN)				THICK (IN)	DESIGN
1773651	P	5 25	R T	T-L	1.999	1.000	CT	0.989	0.30	22.10	1977	RA010	
		2 75			2.003	0.999	CT	1.025	0.43	26.29	1977	RA010	
		5 25			63.4	1.998	1.001	CT	0.993	0.28	21.40	1977	RA010
		6 00			63.7	1.999	1.000	CT	0.978	0.77	35.50	1977	RA009
		4 00			63.9	1.999	0.999	CT	0.964	0.65	32.90	1977	RA009
		6 00			64.1	1.998	0.999	CT	0.962	0.33	23.60	1977	RA010
		5 25			64.1	1.999	0.999	CT	0.962	0.62	32.20	1978	RA008
		4 50			64.3	3.002	1.490	CT	1.480	0.51	29.40	1977	RA009
		6 00			64.6	2.000	1.001	CT	0.961	0.46	28.00	1977	RA009
		6 00			64.6	2.001	0.999	CT	0.958	0.51	29.40	1977	RA009
		4 00			65.0	2.990	1.502	CT	1.555	0.40	26.10	1973	B5836
		4 00			65.0	3.000	1.499	CT	1.564	0.42	26.70	1973	B5836
		6 00			65.0	1.997	0.999	CT	1.032	0.42	36.90	1977	RA009
		4 00			65.0	3.000	1.500	CT	1.540	0.54	30.30	1973	B5836
		5 25			65.3	1.999	0.997	CT	0.969	0.27	21.50	1977	RA010
		4 00			65.5	1.997	0.999	CT	1.005	0.41	26.79	1977	RA009
		3 50			66.1	1.998	0.998	CT	1.050	0.44	28.00	1977	RA009
		3 50			66.2	3.000	1.499	CT	1.494	0.45	28.10	1978	RA008
		3 50			67.4	1.997	0.996	CT	1.032	0.44	28.40	1977	RA009
		3 50			67.6	3.000	1.501	CT	1.541	0.38	26.60	1978	RA008
		3 50			67.6	1.998	0.999	CT	1.073	0.39	25.40	1977	RA009
		2 00			68.2	1.998	0.994	CT	1.009	0.50	30.70	1977	RA009
		3 15			68.9	2.001	1.007	CT	1.019	0.35	29.91	1976	NC001
		3 15			68.9	2.001	1.007	CT	1.012	0.37	26.60	1976	NC001
		3 15			68.9	2.001	1.007	CT	1.031	0.31	24.59	1976	NC001
	2 00			68.9	2.003	1.000	CT	1.019	0.52	31.60	1977	RA010	
	2 00			69.2	1.998	0.994	CT	1.030	0.41	28.29	1977	RA009	
	2 50			69.7	2.001	0.999	CT	1.039	0.26	22.50	1978	RA010	
	1 00			69.8	2.000	0.999	CT	1.035	0.54	32.40	1973	B6213	
	1 00			69.8	2.000	0.998	CT	1.032	0.49	31.00	1973	B6213	
	1 00			70.0	2.000	1.003	CT	1.032	0.49	31.00	1973	B6213	
	1 00			70.0	2.000	1.003	CT	1.030	0.52	31.80	1973	B6213	
	2 50			70.7	2.000	0.999	CT	1.094	0.35	26.79	1978	RA010	
	1 00			72.2	2.000	1.004	CT	1.036	0.50	32.40	1974	B8174	
	1 00			72.2	2.000	1.005	CT	1.038	0.49	32.10	1974	B8174	
	1 00			72.2	2.000	1.005	CT	1.030	0.50	32.30	1974	B8174	
	1 00			72.5	2.000	1.000	NB	0.963	0.65	36.90	1973	B6493	
	1 00			72.5	2.000	1.000	NB	0.963	0.65	36.90	1973	B6493	
	1 00			72.5	2.000	1.000	NB	0.997	0.64	36.70	1973	B6493	

TABLE 8.7.2.1 (Con't)

CONDITION	ALUMINUM				7050		K(IIC)		K(IIC) STAN K(IIC) MEAN DEV (KSI*SQRT IN)	DATE	REFER	
	--PRODUCT--		TEST SPECIMEN ORIENT	YIELD STRENGTH (KSI)	-----SPECIMEN-----		CRACK LENGTH (IN)	2.5* (K(IIC)/TVS)**2 (IN)				
	THICK FORM (IN)	THICK (IN)			WIDTH (IN)	THICK (IN)						DESIGN
T73651	P	1.00	R T	T-L	72.5	2.000	1.000	NB	0.997	0.64	36.80	1973 86493
		1.00			72.5	2.000	1.000	NB	1.000	0.67	37.70	1973 86493
		1.00			72.5	2.000	1.000	NB	1.000	0.68	37.70	1973 86493
		1.00			72.5	2.000	1.000	NB	0.990	0.63	36.30	1973 86493
		1.00			72.5	2.000	1.000	NB	0.978	0.68	37.80	1973 86493
		1.00			72.5	2.000	1.000	NB	0.978	0.68	37.80	1973 86493
		1.00			72.5	2.000	1.000	NB	0.990	0.63	36.30	1973 86493
		1.00			72.5	2.000	1.000	NB	0.963	0.65	36.90	1973 86493
		1.00			72.5	2.000	1.000	NB	0.963	0.65	36.90	28 7/ 4 7 1973 86493
T73651	P	4.00	82	T-L	63.2	4.000	1.998	CT	2.167	0.47	27.30	1973 86213
		4.00			63.2	4.000	1.999	CT	2.126	0.46	27.10	1973 86213
		4.00			64.4	3.990	2.000	CT	2.109	0.43	26.60	1973 86213
		4.00			64.4	4.000	1.998	CT	2.124	0.41	26.20	1973 86213
		2.00			65.7	4.000	1.997	CT	2.166	0.50	29.40	1973 86213
		2.00			65.7	4.000	1.998	CT	2.156	0.49	29.20	1973 86213
		2.00			67.4	4.000	1.997	CT	2.130	0.45	28.50	1973 86213
		2.00			67.4	4.000	1.998	CT	2.123	0.46	28.80	27 9/ 1 2 1973 86213
		1.00	84	T-L	65.4	2.000	0.998	CT	0.994	0.40	26.00	1973 86213
1.00			65.4	2.000	0.999	CT	0.974	0.39	25.90	1973 86213		
0.50			67.2	1.000	0.501	CT	0.505	0.42	27.50	1973 86213		
0.50			67.2	1.000	0.500	CT	0.511	0.40	26.80	26 6/ 0 8 1973 86213		
T73651	P	6.00	R T	S-T	55.8	2.000	1.001	CT	1.023	0.52	25.60	1977 RA009
		6.00			56.2	1.998	1.000	CT	1.077	0.60	27.60	1977 RA009
		6.00			56.4	1.999	1.000	CT	1.029	0.49	25.10	1977 RA009
		6.00			56.6	2.000	1.002	CT	1.035	0.44	24.00	1977 RA009
		6.00			56.8	2.001	1.001	CT	1.001	0.42	23.40	1977 RA009
		6.00			57.1	2.000	1.000	CT	0.947	0.53	26.40	1977 RA009
		6.00			57.6	2.001	1.002	CT	1.033	0.44	24.40	1977 RA009
		6.00			57.6	1.997	0.999	CT	0.993	0.36	22.10	1977 RA009
		6.00			58.1	1.997	1.001	CT	0.994	0.49	25.80	1977 RA009
6.00			58.1	1.996	1.002	CT	1.035	0.59	28.40	1977 RA009		
6.00			58.4	2.000	1.000	CT	1.017	0.51	26.50	1977 RA009		
6.00			58.6	1.998	1.000	CT	0.975	0.35	22.10	1977 RA009		
6.00			58.7	2.000	1.000	CT	1.034	0.42	24.20	1977 RA009		
6.00			58.8	2.001	1.000	CT	1.066	0.44	24.79	1977 RA009		
6.00			59.0	2.001	1.000	CT	1.028	0.37	23.00	1977 RA009		



TABLE 8.7.2.1 (Con't)

CONDITION	PRODUCT FORM	THICK (IN)	TEST TEMP (F)	SPECIMEN ORIENT	YIELD STRENGTH (KSI)	ALUMINUM 7050			K(1C)			DATE	REFER	
						WIDTH (IN)	-----SPECIMEN-----		CRACK LENGTH (IN)	2.5* (K(1C)/TYS)**2 (IN)	K(1C) MEAN (KSI*SQRT IN)			K(1C) STAN DEV
							B	A						
173651	P	6 00	R T	S-T	59.5	1.997	0.997	CT	0.996	0.38	23.50	1977	RA009	
		6 00			60.5	2.000	1.000	CT	1.020	0.36	23.10	1977	RA009	
		6 00			60.7	2.000	1.000	CT	1.048	0.40	24.50	1977	RA009	
		4 00			61.0	1.998	0.998	CT	0.976	0.38	23.90	1977	RA009	
		4 00			61.2	1.998	0.999	CT	0.996	0.46	26.40	1977	RA009	
		4 00			61.6	1.998	0.996	CT	0.976	0.45	26.20	1977	RA009	
		4 00			62.9	1.998	0.996	CT	0.963	0.36	23.90	1977	RA009	
		4 00			64.1	1.998	0.994	CT	1.026	0.31	22.79	1977	RA009	
		3 50			64.2	1.998	0.999	CT	0.938	0.32	23.00	1978	RA008	
		3 15			64.3	2.002	1.007	CT	1.020	0.24	20.33	1976	NC001	
		3 15			64.3	2.002	1.007	CT	1.038	0.30	22.52	1976	NC001	
		3 15			64.3	2.002	1.007	CT	1.066	0.29	20.73	1976	NC001	
		2 50			64.8	2.001	0.999	CT	1.056	0.28	21.90	1978	RA010	
		4 00			65.4	1.998	0.998	CT	0.979	0.27	21.79	1977	RA009	
		3 50			65.9	2.000	0.998	CT	0.956	0.31	23.29	1978	RA008	
		2 50			66.3	2.001	0.999	CT	1.028	0.30	23.00	1978	RA010	
		3 50			66.3	1.997	0.997	CT	1.034	0.32	23.90	1977	RA009	
		3 50			66.5	1.998	0.998	CT	1.050	0.31	23.60	1977	RA009	
		3 50			67.1	1.997	0.995	CT	1.018	0.28	22.90	1977	RA009	
173651	P	5 25	R T	S-L	55.2	1.999	0.999	CT	0.924	0.43	22.90	1977	RA010	
		4 50			56.1	2.003	1.000	CT	1.033	0.46	24.29	1977	RA010	
		2 75			56.6	2.003	0.999	CT	0.982	0.44	23.79	1977	RA010	
		5 25			56.8	2.003	1.000	CT	0.950	0.39	22.60	1977	RA010	
		5 00			56.8	4.000	2.010	CT	2.070	0.47	24.70	1975	AL015	
		5 00			56.8	4.000	2.010	CT	2.070	0.47	24.70	1975	AL015	
		5 25			56.9	2.000	0.998	CT	1.005	0.40	22.79	1977	RA010	
		5 25			57.0	1.999	1.000	CT	0.933	0.42	23.40	1977	RA010	
		5 25			57.0	1.999	0.998	CT	0.944	0.41	23.20	1977	RA010	
		5 25			57.1	1.999	0.999	CT	0.941	0.36	21.90	1977	RA010	
		5 25			57.6	2.003	1.001	CT	0.946	0.40	23.29	1977	RA010	
		5 25			57.8	2.003	1.001	CT	0.990	0.42	23.70	1977	RA010	
		5 25			58.0	2.003	1.000	CT	0.959	0.36	22.29	1977	RA010	
		5 25			58.0	2.000	0.999	CT	0.938	0.42	23.90	1977	RA010	
		5 25			58.1	2.003	0.970	CT	0.969	0.41	23.70	1977	RA010	
		5 25			58.3	1.999	0.997	CT	0.968	0.43	24.10	1977	RA010	
		5 25			58.6	2.000	1.000	CT	0.955	0.38	23.10	1977	RA010	
		5 25			58.9	2.000	0.998	CT	0.966	0.37	22.79	1977	RA010	
5 00			59.3	4.000	2.000	CT	2.030	0.37	22.80	1975	AL015			



TABLE 8.7.2.1 (Con't)

CONDITION	ALUMINUM				TEST SPECIMEN ORIENT	YIELD STRENGTH (KSI)	7050		K(1C)		K(1C) STAN DEV	DATE	REFER	
	--PRODUCT-- FORM	THICK (IN)	TEMP (F)	WIDTH (IN)			SPECIMEN		CRACK LENGTH (IN)	2.5* (K(1C)/TYS)**2 (IN)				
							THICK (IN)	DESIGN						
T73652	F	4 50	82	L-T	3 000	1.498	CT	1 554	0 82	35 50	1973	86213		
		2 50			3 000	1.499	CT	1 465	0 47	29 30	1973	86213		
T73652	F	4 50	R.T.	T-L	3 000	1 510	CT	1 540	0 31	20 90	1975	AL015		
		4 50			3 000	1 510	CT	1 560	0 32	21 20	1975	AL015		
		7 50			3 000	1 500	CT	1 560	0 23	18 40	1975	AL015		
		3 50			3 000	1 500	CT	1 530	0 32	21 90	1975	AL015		
		4 50			3 000	1 500	CT	1 580	0 25	19 10	1975	AL015		
		4 50			3 000	1 500	CT	1 560	0 32	21 70	1975	AL015		
		3 50			3 000	1 500	CT	1 560	0 27	20 00	1975	AL015		
		4 50			3 000	1 500	CT	1 520	0 29	21 30	1975	AL015		
		5 50			3 000	1 500	CT	1 540	0 29	21 30	1975	AL015		
		5 50			3 000	1 500	CT	1 580	0 30	22 70	1975	AL015		
		3 50			3 000	1 500	CT	1 540	0 29	22 50	1975	AL015		
		5 50			3 000	1 500	CT	1 560	0 21	19 00	1975	AL015		
		5 50			3 000	1 500	CT	1 580	0 22	19 70	20 7/ 1 4	1975	AL015	
T73652	F	4 50	82	T-L	3 000	1.499	CT	1 556	0 33	21 90	1973	86213		
		2 50			3 000	1 500	CT	1 580	0 40	26 20	1973	86213		
		2 50			3 000	1.498	CT	1 604	0 43	27 20	25 1/ 2 8	1973	86213	
T73652	F	3 50	R.T.	S-L	3 000	1 500	CT	1 540	0 29	19 40	1975	AL015		
		3 50			3 000	1 500	CT	1 530	0 29	19 30	1975	AL015		
		5 50			3 000	1 500	CT	1 540	0 29	19 30	1975	AL015		
		5 50			3 000	1 500	CT	1 500	0 27	18 90	1975	AL015		
		5 50			3 000	1 500	CT	1 560	0 25	18 10	1975	AL015		
		4 50			3 000	1 500	CT	1 560	0 26	18 60	1975	AL015		
		4 50			3 000	1 500	CT	1 500	0 24	18 00	1975	AL015		
		7 50			3 000	1 500	CT	1 520	0 34	21 40	1975	AL015		
		7 50			3 000	1 500	CT	1 540	0 20	16 50	1975	AL015		
		7 50			3 000	1 500	CT	1 540	0 29	20 70	1975	AL015		
		4 50			3 000	1 500	CT	1 530	0 19	16 80	1975	AL015		
		4 50			3 000	1 500	CT	1 530	0 26	20 20	1975	AL015		
		5 50			3 000	1 500	CT	1 560	0 23	19 00	1975	AL015		
		5 50			3 000	1 500	CT	1 610	0 27	21 10	1975	AL015		
		3 50			3 000	1 500	CT	1 570	0 28	21 40	1975	AL015		
		3 50			3 000	1 500	CT	1 570	0 28	21 40	1975	AL015		
		---			---	1 500	0 750	CT	0 770	0 19	18 60	19 2/ 1 4	1975	AL015
		---			---	1 500	0 750	CT	0 760	0 19	18 70	19 2/ 1 4	1975	AL015



TABLE 8.7.3.1

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.7.3.1 INDICATING EFFECT

OF STRESS RATIO

MATERIAL: ALUMINUM 7050  
CONDITION: T6  
ENVIRONMENT: R.T., L.H.A.

DELTA K  
(KSI\*IN\*\*1/2)

DA/DN (10\*\*-6 IN./CYCLE)

A

B

C

D

R=+0.33

DELTA K A: 6.13 2.91  
MIN B:  
C:  
D:

7.00 4.01  
8.00 6.16  
9.00 8.98  
10.00 11.9  
13.00 21.8  
16.00 41.8  
20.00 114.  
25.00 280.

DELTA K A: 25.27 287.  
MAX B:  
C:  
D:

ROOT MEAN SQUARE 9.08  
PERCENT ERROR

LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25 4  
SUMMARY 1.25-2.0  
(NP/NA) >2.0

CONDITION/HT: T6  
 FORM: 0.18" TH SHEET  
 SPECIMEN TYPE: CCP  
 ORIENTATION: T-L  
 FREQUENCY: 13.30 HZ  
 ENVIRONMENT: R. T., L. H. A.

YIELD STRENGTH: 75.0 KSI  
 ULT. STRENGTH: 83.2 KSI  
 SPECIMEN THK: 0.177- 0.179"  
 SPECIMEN WIDTH: 3.999- 4.000"  
 REFERENCES: 86213

ALUM.  
 ALLOY

7050

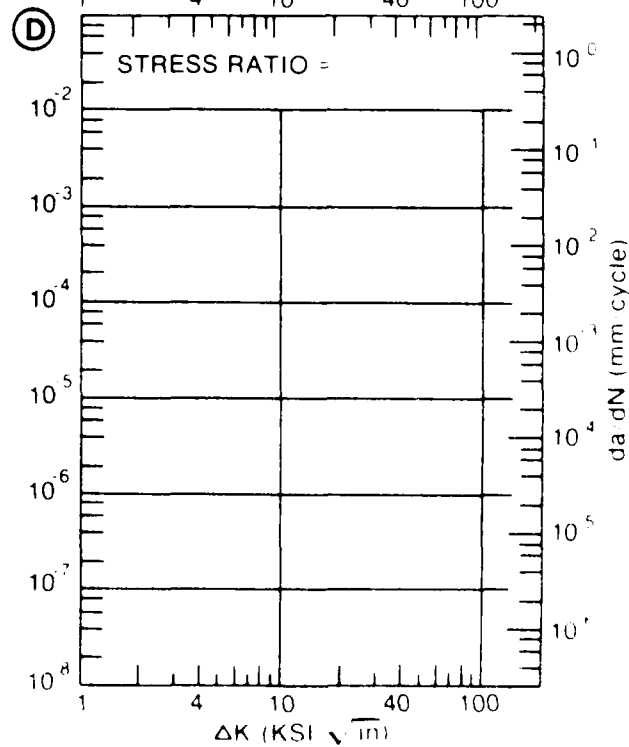
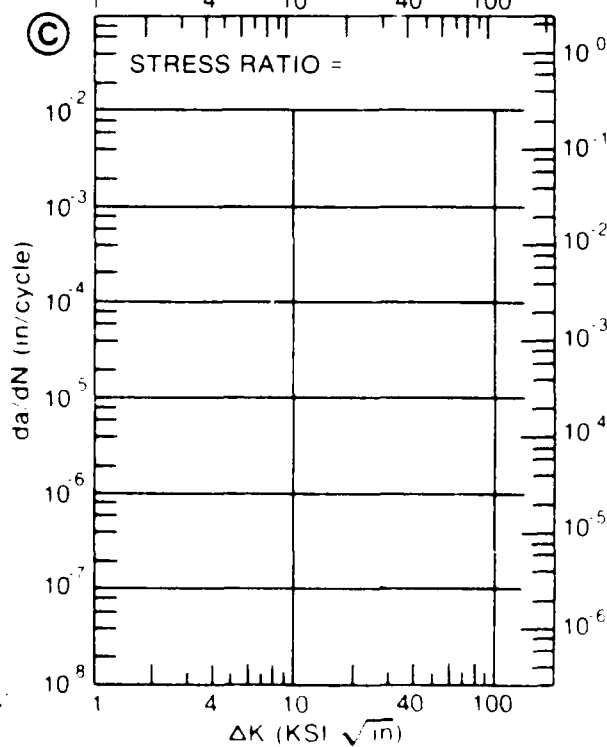
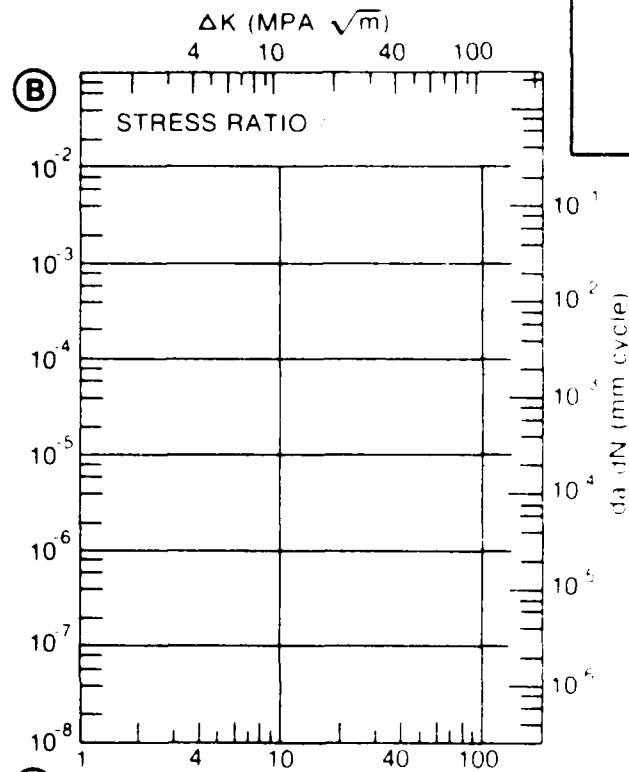
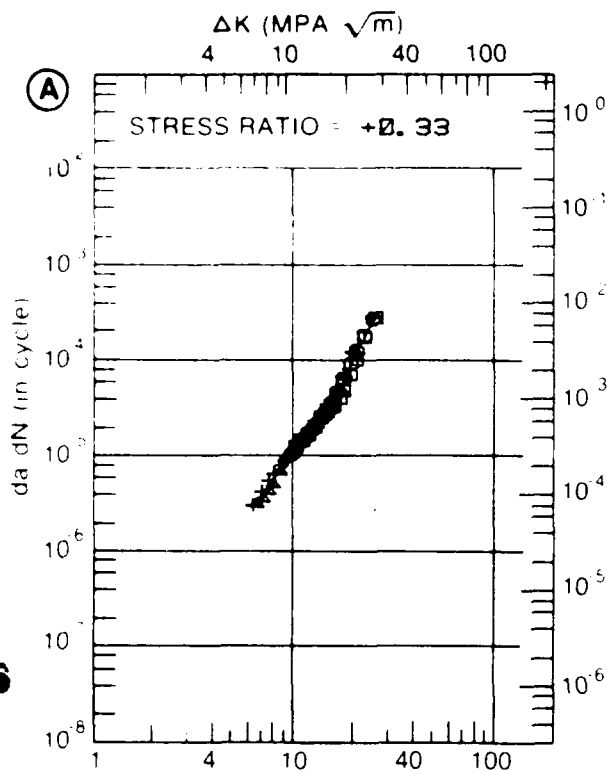


Figure 8.7.3.1

TABLE 8.7.3.2

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTORDATA ASSOCIATED WITH FIGURE 8.7.3.2 INDICATING EFFECT  
OF ENVIRONMENTMATERIAL: ALUMINUM 7050  
CONDITION: T6

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R. T. H. H. A.			
DELTA K MIN	A: 6.00	4.98			
	B:				
	C:				
	D:				
	7.00	7.43			
	8.00	10.9			
	9.00	15.4			
	10.00	21.3			
DELTA K MAX	13.00	48.2			
	16.00	89.5			
	20.00	163.			
	A: 20.34	170.			
	B:				
	C:				
	D:				
ROOT MEAN SQUARE PERCENT ERROR		6.10			

LIFE	0.0-0.5	
PREDICTION	0.5-0.8	
RATIO	0.8-1.25	2
SUMMARY	1.25-2.0	
(NP/NA)	>2.0	

CONDITION/HT: T6  
 FORM: 0.18" TH SHEET  
 SPECIMEN TYPE: CCP  
 ORIENTATION: T-L  
 STRESS RATIO: +0.33  
 FREQUENCY: 13.30 HZ

YIELD STRENGTH: 75.0 KSI  
 ULT. STRENGTH: 83.2 KSI  
 SPECIMEN THK: 0.176- 0.177"  
 SPECIMEN WIDTH: 4.000"  
 REFERENCES: 86213

ALUM.  
 ALLOY

7050

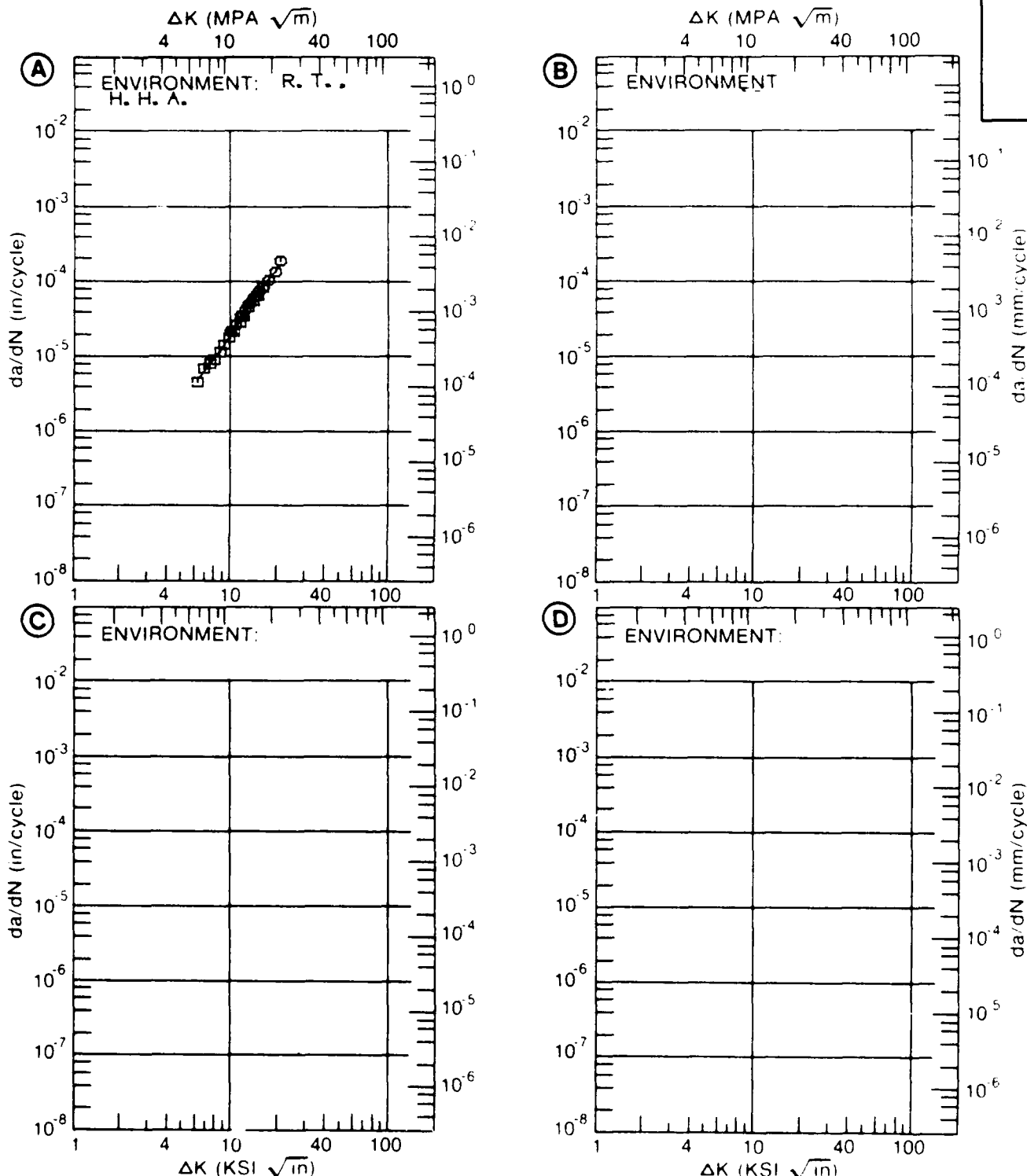


Figure 8.7.3.2



TABLE 8.7.3.3

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.7.3.3 INDICATING EFFECT  
OF ENVIRONMENT

MATERIAL: ALUMINUM 7050  
CONDITION: T6

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R. T. H. H. A.			
DELTA K MIN	A:	6.88	6.37		
	B:				
	C:				
	D:				
		7.00	6.78		
		8.00	10.6		
		9.00	15.3		
		10.00	20.8		
		13.00	45.7		
		16.00	94.1		
		20.00	220.		
DELTA K MAX	A:	20.15	221.		
	B:				
	C:				
	D:				
ROOT MEAN SQUARE PERCENT ERROR		7.02			

LIFE	0.0-0.5	
PREDICTION	0.5-0.8	
RATIO	0.8-1.25	2
SUMMARY	1.25-2.0	
(NP/NA)	>2.0	

CONDITION/HT: T6  
 FORM: 0.18" TH SHEET  
 SPECIMEN TYPE: CCP  
 ORIENTATION: T-L  
 STRESS RATIO: +0.33  
 FREQUENCY: 13.30 HZ

YIELD STRENGTH: 74.5 KSI  
 ULT STRENGTH: 82.7 KSI  
 SPECIMEN THK: 0.180- 0.181"  
 SPECIMEN WIDTH: 3.999- 4.000"  
 REFERENCES: 86213

ALUM.  
ALLOY

7050

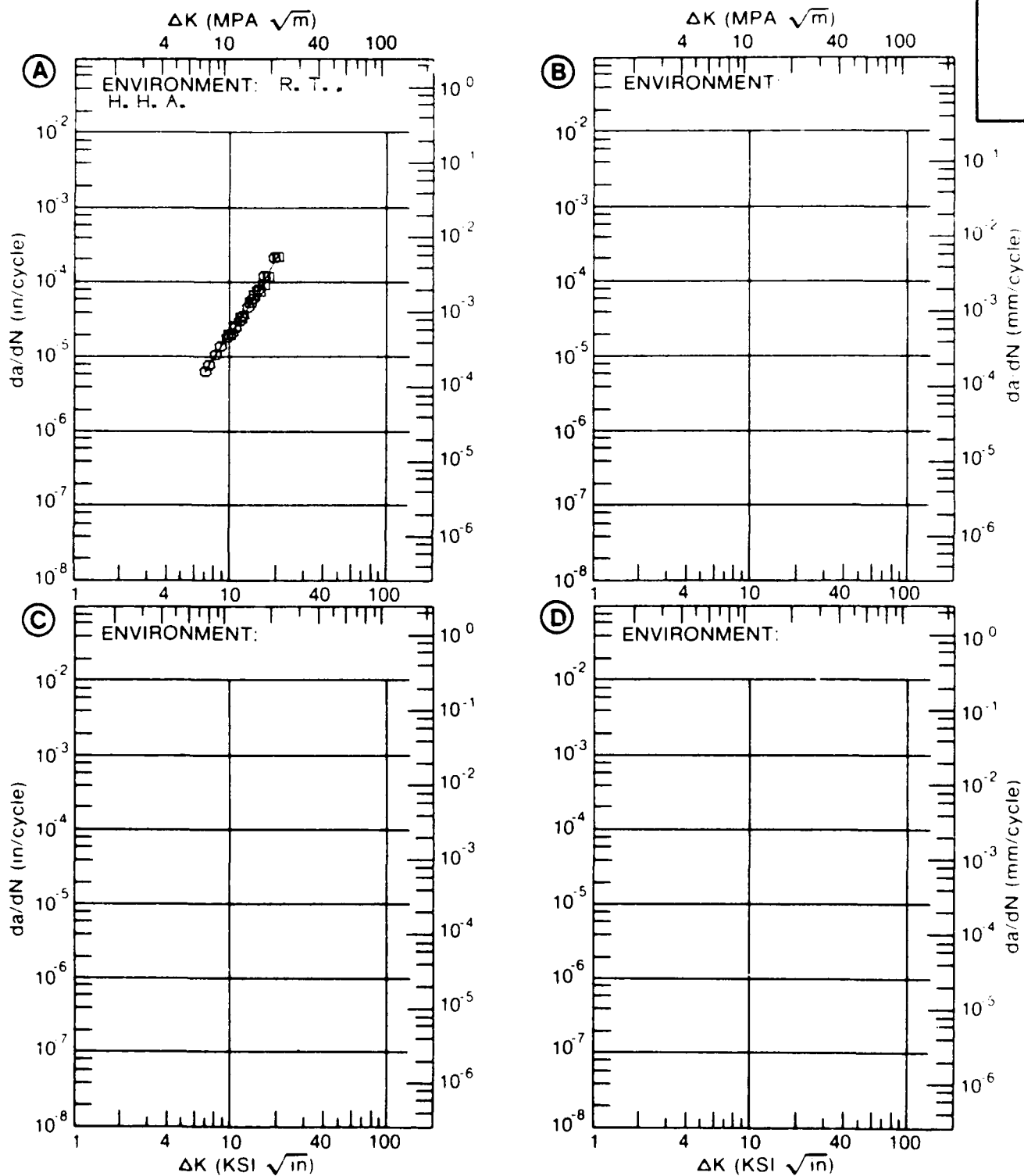


Figure 8.7.3.3

TABLE 8.7.3.4

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.7.3.4 INDICATING EFFECT  
OF STRESS RATIO

MATERIAL: ALUMINUM		7050			
CONDITION: T73					
ENVIRONMENT: R T J L H. A.					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		R=+0.08			
DELTA K MIN	A: 12.21	.227			
	B:				
	C:				
	D:				
	13.00	.427			
	16.00	1.27			
	20.00	12.6			
	25.00	29.2			
DELTA K MAX	A: 28.21	64.2			
	B:				
	C:				
	D:				
ROOT MEAN SQUARE		9.95			
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25	1			
SUMMARY	1.25-2.0				
(NP/NA)	2.0				

CONDITION/HT: T73  
 FORM: FORGING  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 FREQUENCY: 6.00 HZ  
 ENVIRONMENT: R. T., L. H. A.

YIELD STRENGTH: 71.0 KSI  
 ULT STRENGTH: 78.0 KSI  
 SPECIMEN THK: 0.500"  
 SPECIMEN WIDTH: 2.810"  
 REFERENCES: 88579

ALUM.  
 ALLOY

7050

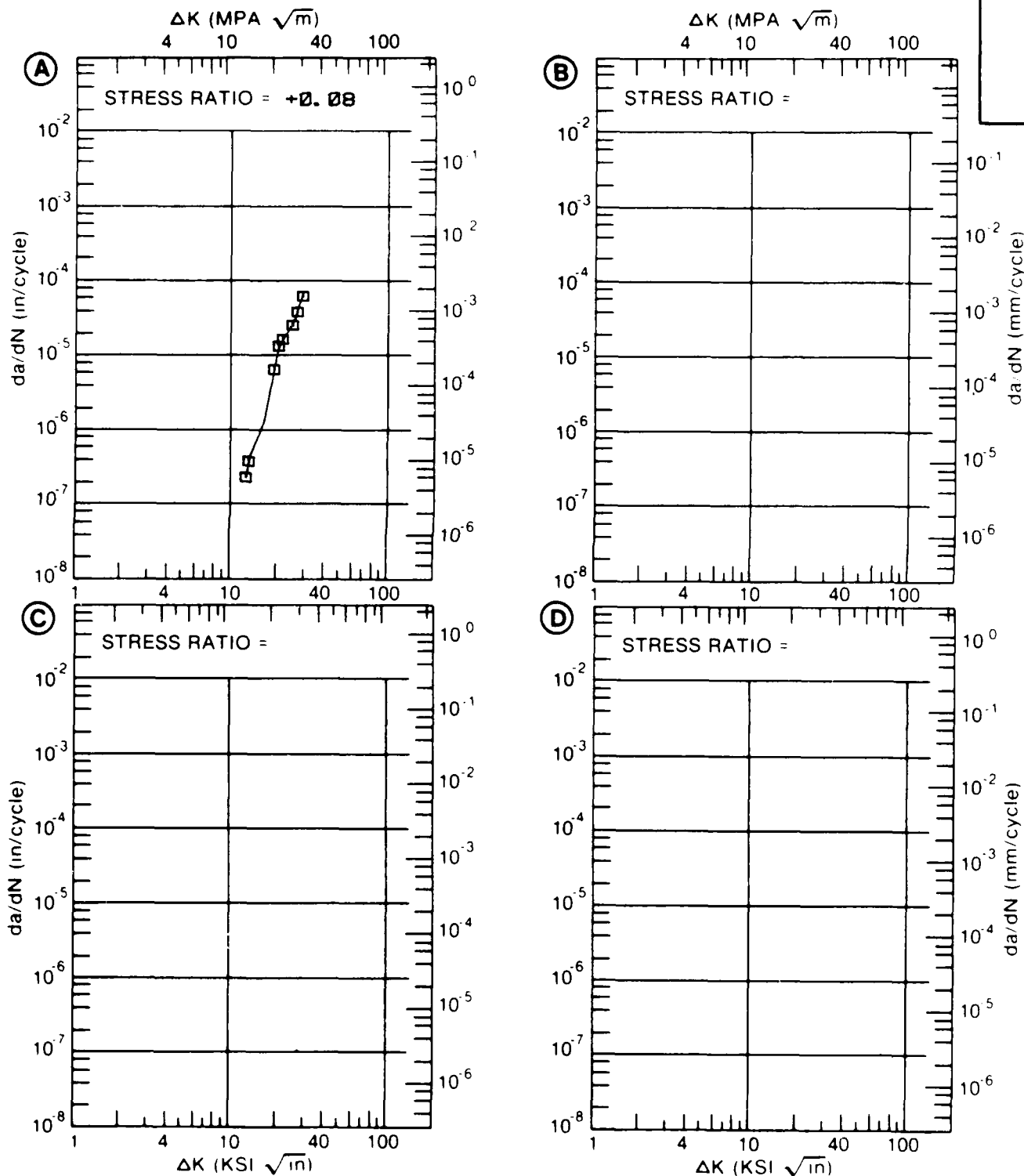


Figure 8.7.3.4

TABLE 8.7.3.5

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.7.3.5 INDICATING EFFECT

OF ENVIRONMENT

MATERIAL: ALUMINUM 7050  
CONDITION: T7351

DELTA K  
(KSI\*IN\*\*1/2)

DA/DN (10\*\*-6 IN./CYCLE)

A

B

C

D

E= R. F.  
3.5% NaCl

DELTA K A: 3.01 : .017  
MIN B: 8  
C:  
D:

3.50 : .102  
4.00 : .271  
5.00 : .765  
6.00 : 1.67  
7.00 : 3.27  
8.00 : 5.76  
9.00 : 9.22  
10.00 : 13.5  
13.00 : 29.9  
16.00 : 49.3  
20.00 : 78.5  
25.00 : 121.

DELTA K A: 27.97 : 152.  
MAX B:  
C:  
D:

ROOT MEAN SQUARE 10.75  
PERCENT ERROR

LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25 1  
SUMMARY 1.25-2.0  
(NP/NA) 2.0

CONDITION/HT: T7351  
 FORM: 1.00" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 STRESS RATIO: +0.10  
 FREQUENCY: 20.00 HZ

YIELD STRENGTH:  
 ULT STRENGTH:  
 SPECIMEN THK: 0.151"  
 SPECIMEN WIDTH: 3.000"  
 REFERENCES: 86844

ALUM.  
 ALLOY

7050

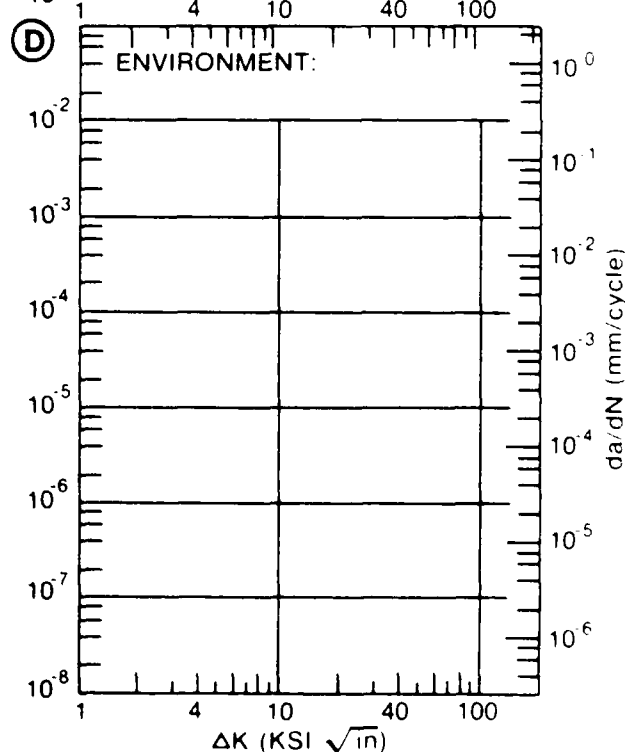
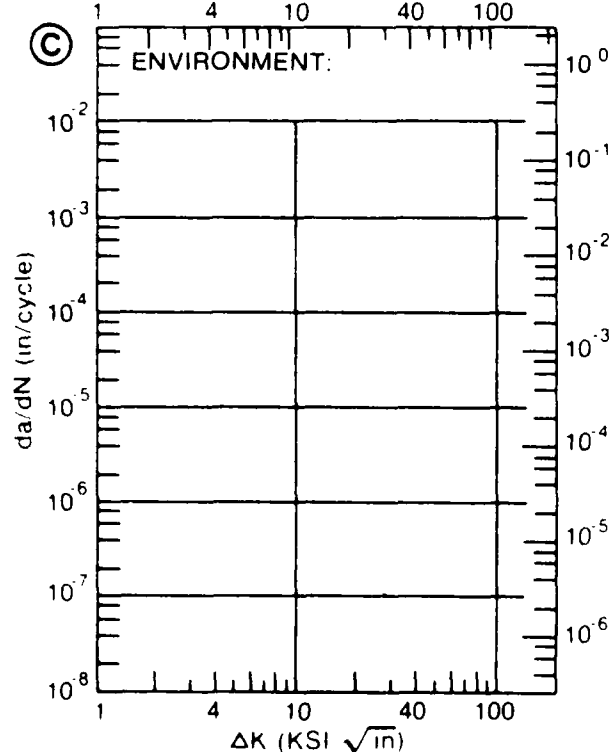
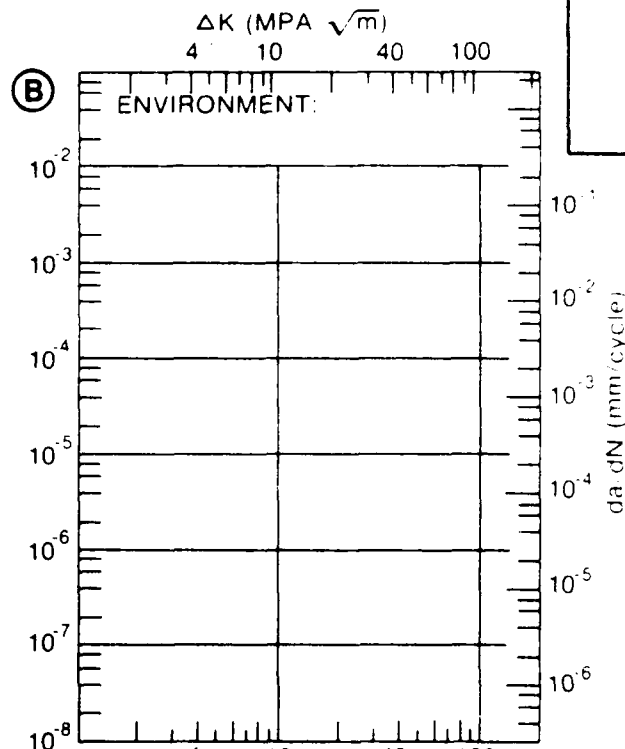
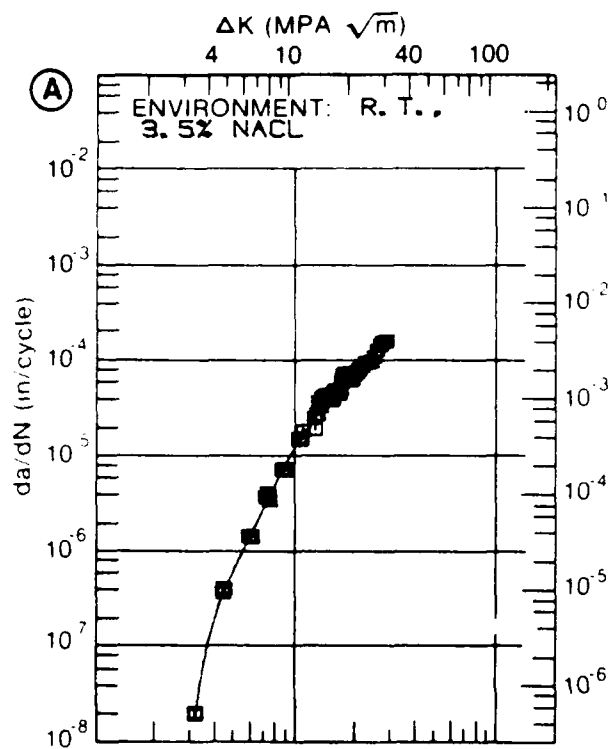


Figure 8.7.3.5

TABLE 8.7.3.6

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTORDATA ASSOCIATED WITH FIGURE 8.7.3.6 INDICATING EFFECT  
OF ENVIRONMENTMATERIAL: ALUMINUM 7050  
CONDITION: T7351

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R. T. H. H. A.	E= R. T. 3.5% NaCl		
DELTA K MIN	A:	6.08	1.52		
	B:	5.19	.272		
	C:				
	D:				
	6.00		1.15		
	7.00	2.47	4.36		
	8.00	3.71	9.90		
	9.00	5.15	16.2		
	10.00	6.79	22.9		
	13.00	13.1	54.4		
	16.00	22.3	106.		
	20.00	42.1	171.		
	25.00	83.3	237.		
	30.00	141.	318.		
DELTA K MAX	A:	30.08	142.		
	B:	32.15	367.		
	C:				
	D:				
ROOT MEAN SQUARE		6.27	8.42		
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25	1			
SUMMARY	1.25-2.0		1		
(NP/NA)	>2.0				

CONDITION HT: T7351  
 FORM: 1.00" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 STRESS RATIO: +0.10  
 FREQUENCY: 2.00 HZ

YIELD STRENGTH:  
 ULT. STRENGTH:  
 SPECIMEN THK: 0.148- 0.152"  
 SPECIMEN WIDTH: 3.000"  
 REFERENCES: 86844

ALUM.  
 ALLOY

7050

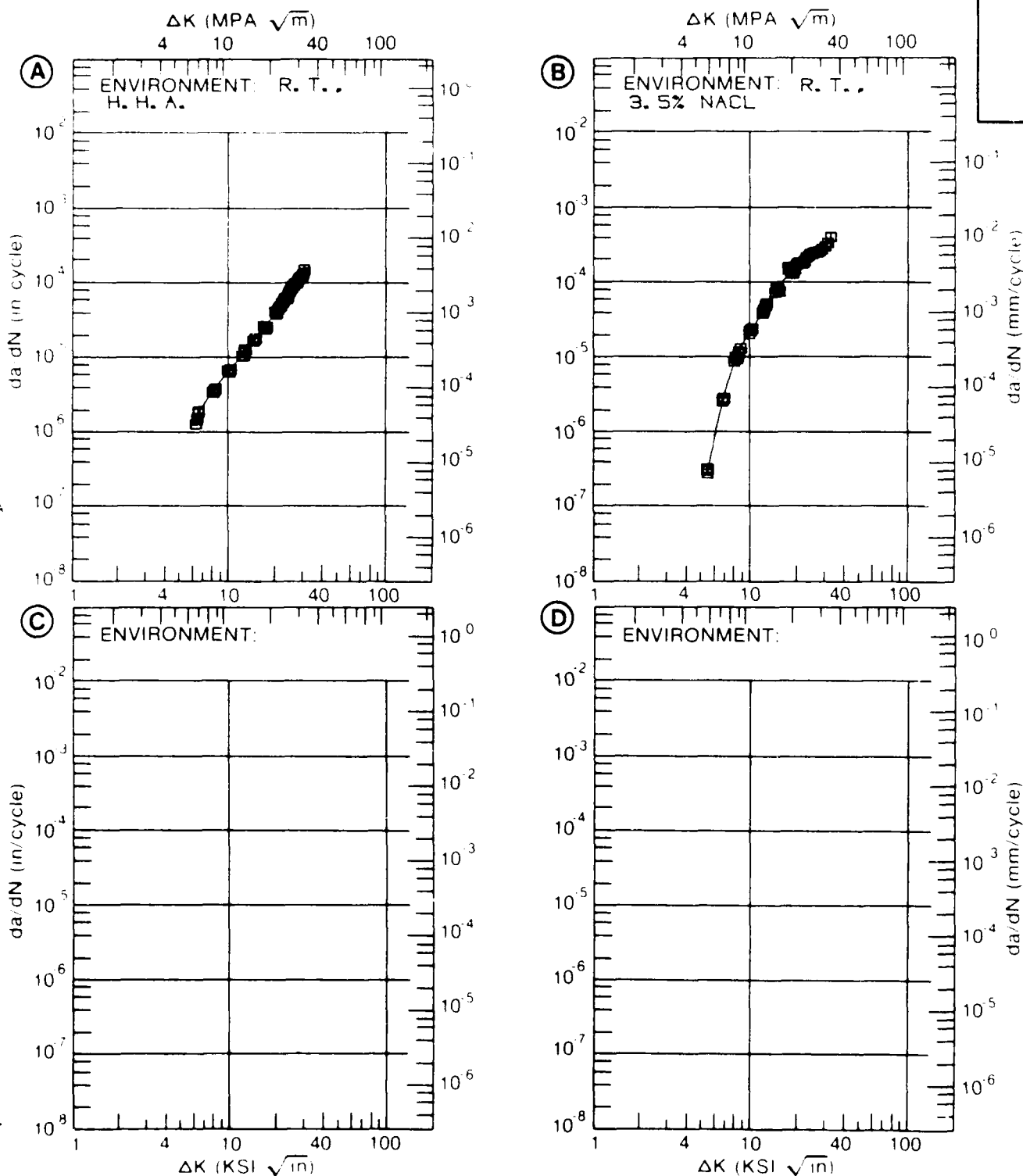


Figure 8.7.3.6



TABLE 8.7.3.7

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.7.3.7 INDICATING EFFECT

OF ENVIRONMENT

MATERIAL ALUMINUM 7050  
CONDITION T7351

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R I DRY AIR	E= R T S T W		
DELTA K	A: 5.69	822			
MIN	B: 5.16		1.94		
	C:				
	D:				
	6.00	942	4.30		
	7.00	1.64	8.88		
	8.00	3.01	13.2		
	9.00	4.93	16.6		
	10.00	6.92	20.4		
	13.00	13.0	42.8		
	16.00	22.8			
	20.00	62.1			
DELTA K	A: 20.51	72.4			
MAX	B: 15.33		45.1		
	C:				
	D:				
ROOT MEAN SQUAPE		10.72	14.34		
PERCENT ERROR					

LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25  
SUMMARY 1.25-2.0  
(NP/NA) >2.0

CONDITION/HT T7351  
 FORM 2.02- 4.22 TH PLATE  
 SPECIMEN TYPE CT  
 ORIENTATION LT  
 STRESS RATIO +0.33  
 FREQUENCY 2.22- 22.22 Hz

YIELD STRENGTH 1100 MPa  
 UTS STRENGTH 1200 MPa  
 SPECIMEN THK 2.0 mm  
 SPECIMEN WIDTH 12.5 mm  
 REFERENCES 1, 2, 3

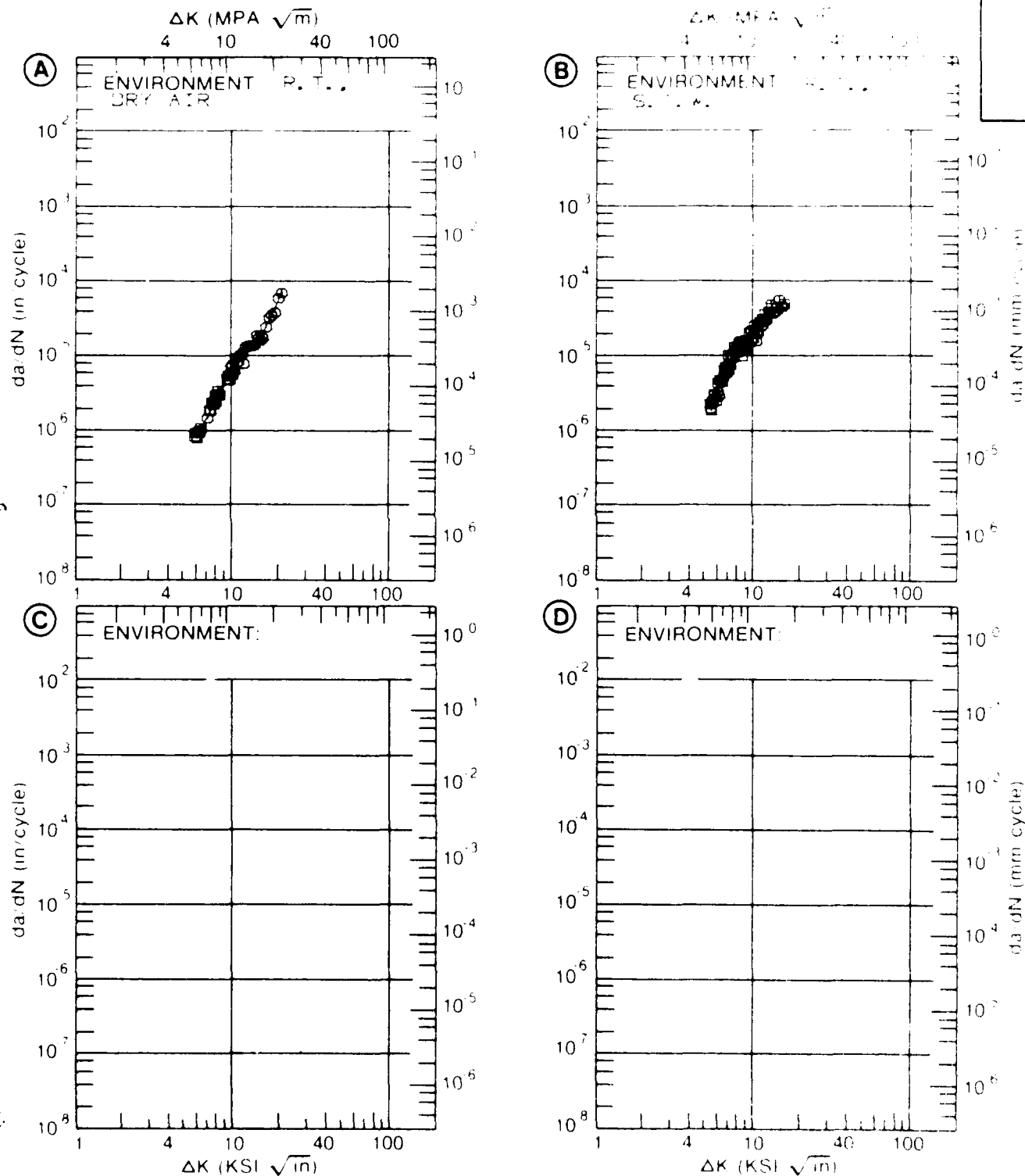



Figure 8.7.3.7

TABLE 8.7.3.8

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.7.3.8 INDICATING EFFECT

OF ENVIRONMENT

MATERIAL: ALUMINUM 7050  
CONDITION: T7351

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R. T. DRY AIR	E= R. T. H. H. A.	E= R. T. S. T. W.	
DELTA K MIN	A:	5.89	856		
	B:	5.68	1.36		
	C:	4.52		1.58	
	D:				
	5.00			1.72	
	6.00	.981	1.87	3.69	
	7.00	1.86	4.08	7.26	
	8.00	3.63	6.44	12.0	
	9.00	6.11	8.73	16.7	
	10.00	8.65	11.2	21.0	
	13.00	19.1	25.8	35.9	
	16.00	49.0	62.3	56.2	
DELTA K MAX	A:	18.96	89.2		
	B:	18.14	134.		
	C:	17.01		61.7	
	D:				
ROOT MEAN SQUARE		24.19	13.88	18.31	
PERCENT ERROR					

LIFE 0.0-0.5  
 PREDICTION 0.5-0.8  
 RATIO 0.8-1.25  
 SUMMARY 1.25-2.0  
 (NP/NA) >2.0

CONDITION/HT: T7351  
 FORM: 2.00- 4.00" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: T-L  
 STRESS RATIO: +0.33  
 FREQUENCY: 1.50- 20.00 HZ

YIELD STRENGTH: 60.9- 63.4 KSI  
 ULT. STRENGTH: 72.1- 74.4 KSI  
 SPECIMEN THK: 1.000"  
 SPECIMEN WIDTH: 3.805"  
 REFERENCES: AL001

ALUM.  
 ALLOY

7252

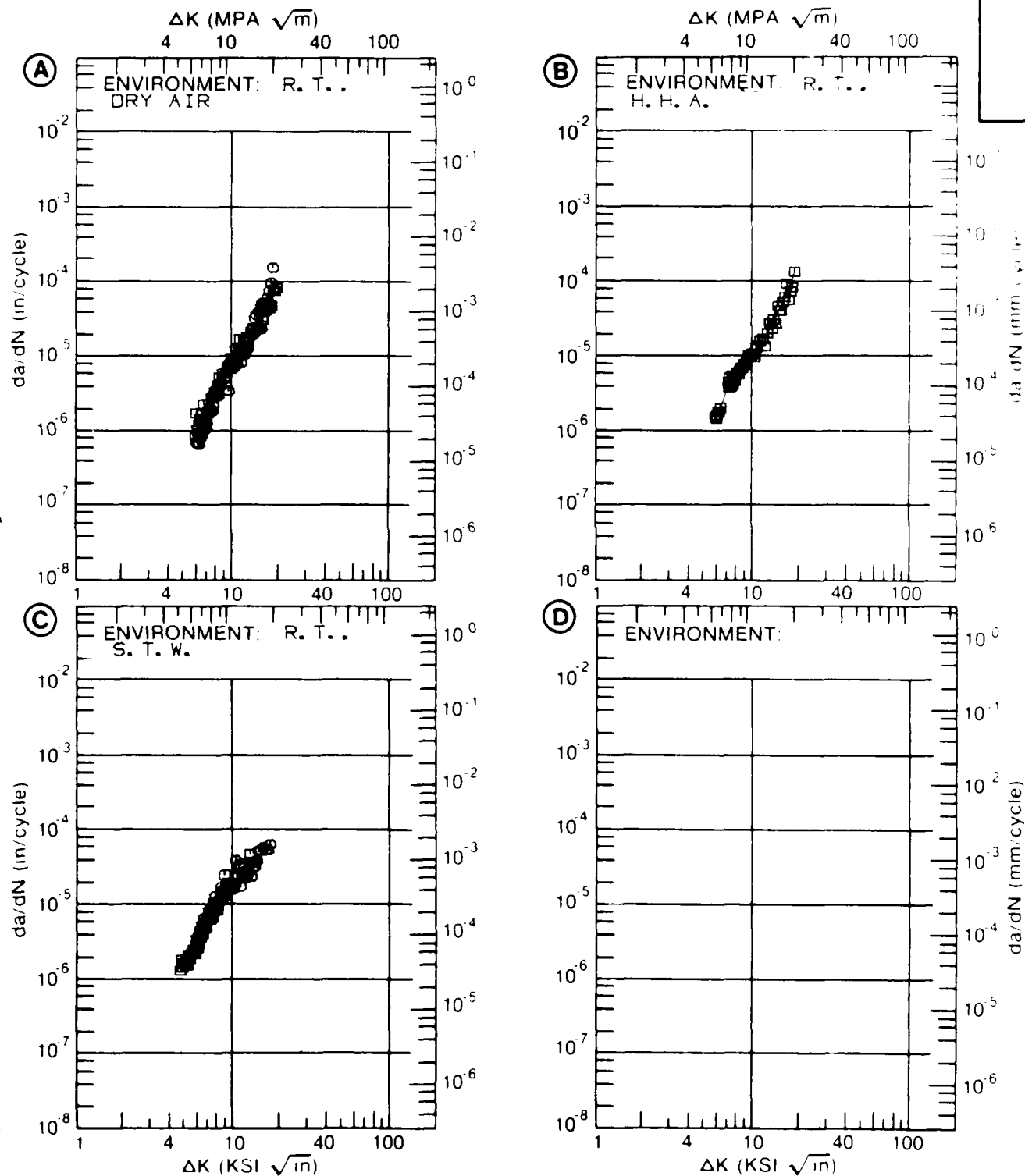


Figure 8.7.3.8

TABLE 8.7.3.9

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.7.3.9 INDICATING EFFECT  
OF ENVIRONMENT

MATERIAL: ALUMINUM 7050  
CONDITION: T7351

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		E= R. T. DRY AIR	E= R. T. S. T. W.		
DELTA K MIN	A:	5.28	.839		
	B:				
	C:				
	D:				
		6.00	.937		
		7.00	1.77		
DELTA K MAX	A:	7.69	2.77		
	B:				
	C:				
	D:				
ROOT MEAN SQUARE		10.40	0.00		
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25				
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION/HT: T7351  
 FORM: 4.00" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: T-L  
 STRESS RATIO: +0.67  
 FREQUENCY: 30.00 HZ

YIELD STRENGTH: 63.4 KSI  
 ULT. STRENGTH: 74.4 KSI  
 SPECIMEN THK: 0.250"  
 SPECIMEN WIDTH: 2.550"  
 REFERENCES: AL001

ALUM.  
 ALLOY

7050

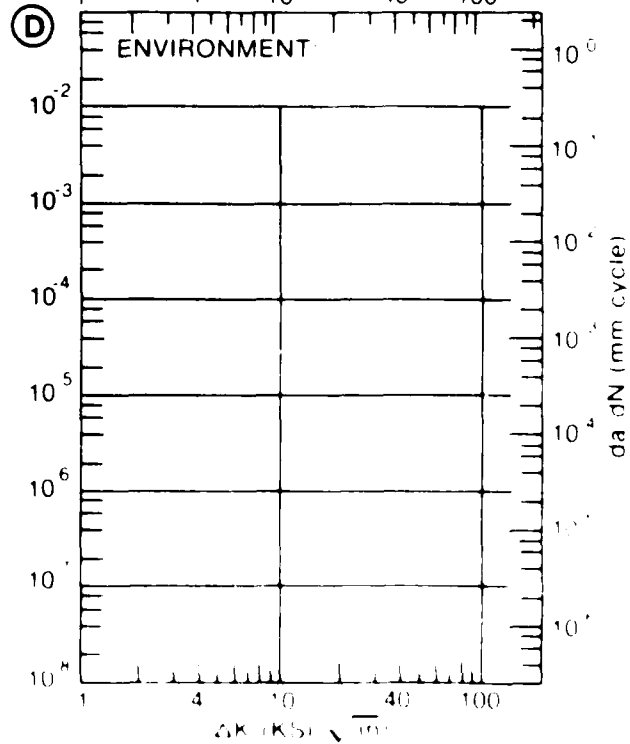
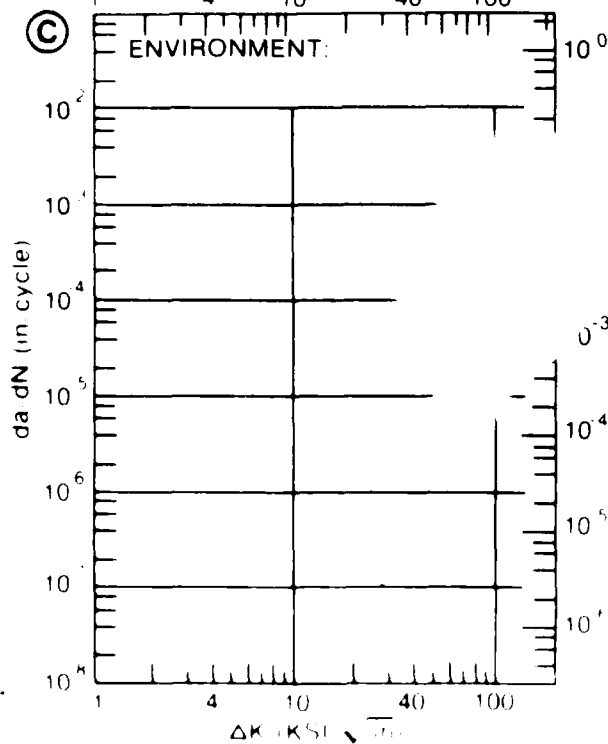
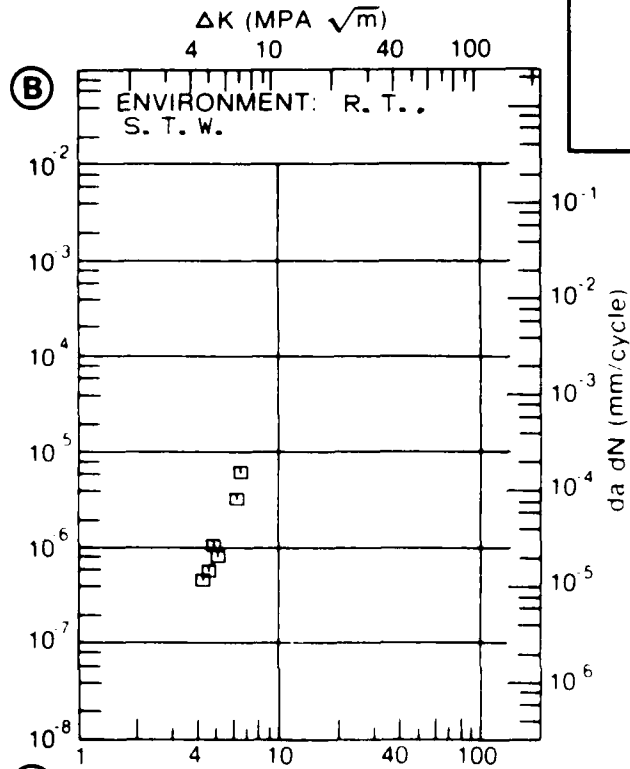
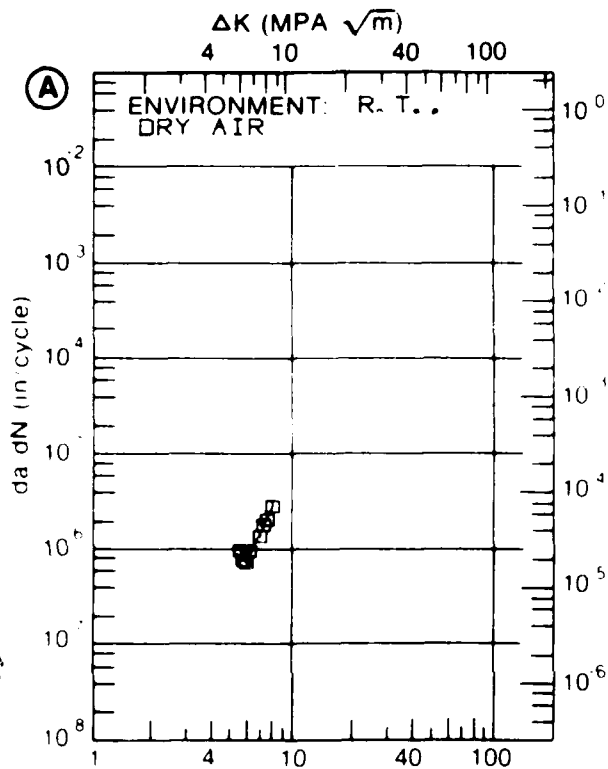


TABLE 8.7.3.10

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.7.3.10 INDICATING EFFECT

## OF ENVIRONMENT

---

MATERIAL: ALUMINUM 7050  
CONDITION: T7351

---

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R. T. DRY AIR 1.5-15HZ	E= R. T. H. H. A. 10-20HZ	E= R. T. S. T. W., 20HZ	
DELTA K	A: 5.73	.995			
MIN	B: 5.73		1.78		
	C: 5.72			4.28	
	D:				
	6.00	1.01	1.73	4.82	
	7.00	2.09	3.33	7.80	
	8.00	3.65	6.00	11.8	
	9.00	5.36	8.85	15.8	
	10.00	7.36	11.9	19.7	
	13.00	19.7	26.8		
	16.00	73.2	78.4		
DELTA K	A: 18.78	193.			
MAX	B: 17.68		192.		
	C: 11.73			27.5	
	D:				
ROOT MEAN SQUARE		16.80	15.19	13.74	
PERCENT ERROR					

---

LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25  
SUMMARY 1.25-2.0  
(NP/NA) >2.0

CONDITION/HT: T7351  
 FORM: 4.00" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: S-L  
 STRESS RATIO: 0.33  
 FREQUENCY:

YIELD STRENGTH: 60.0 KSI  
 ULT. STRENGTH: 72.4 KSI  
 SPECIMEN THK: 1.000"  
 SPECIMEN WIDTH: 3.805"  
 REFERENCES: AL001

ALUM.  
ALLOY

7050

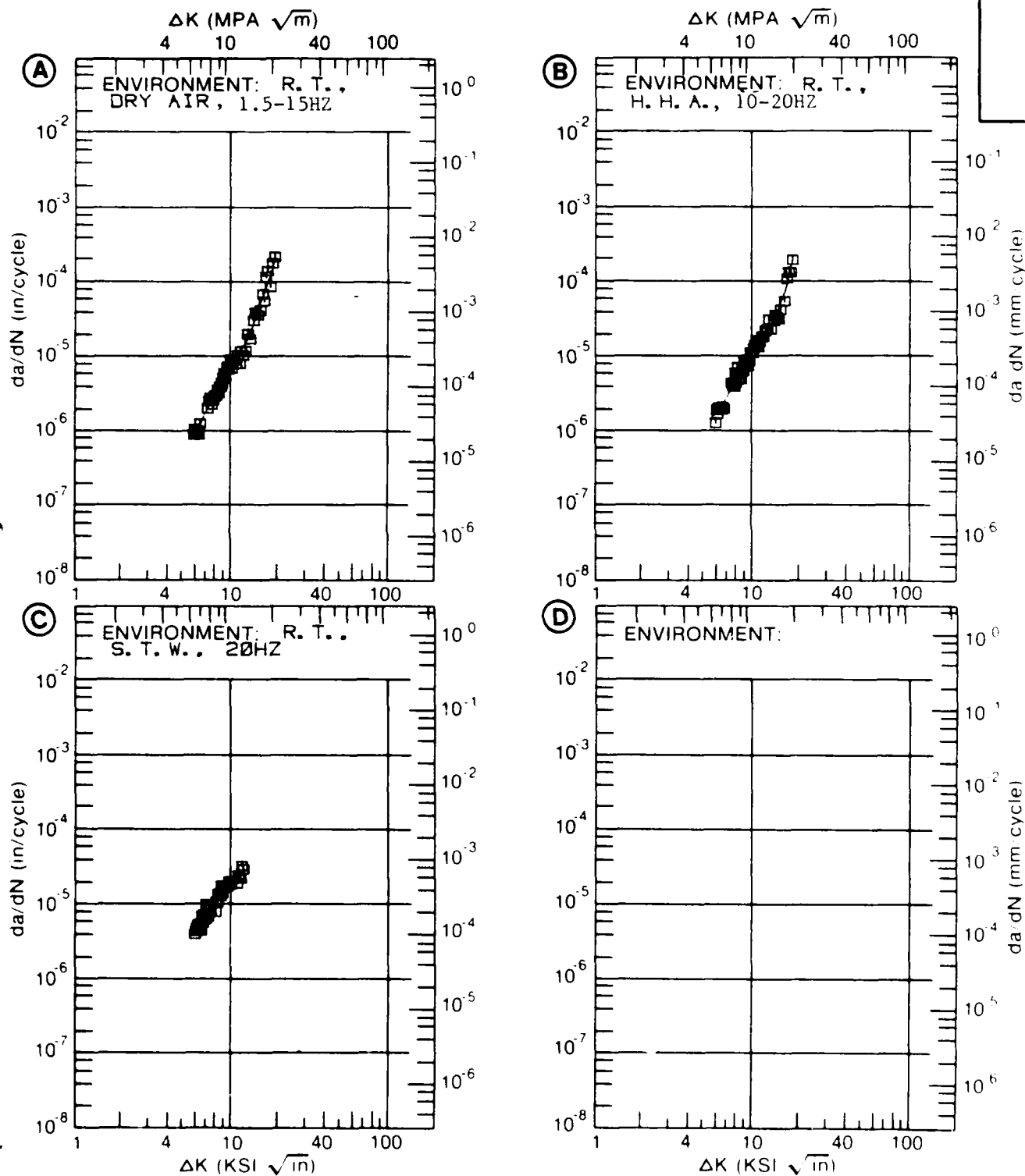


Figure 8.7.3.10



TABLE 8.7.3.11

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.7.3.11 INDICATING EFFECT  
OF ENVIRONMENT

MATERIAL: ALUMINUM  
CONDITION: T7351X

7050

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R. T. L. H. A.	E= R. T. H. H. A.		
DELTA K MIN	A:	4.55	.397		
	B:	3.54	.262		
	C:				
	D:				
	4.00		.457		
	5.00	.495	1.21		
	6.00	.680	2.58		
	7.00	.974	4.70		
	8.00	1.50	7.65		
	9.00	2.32	11.4		
DELTA K MAX	10.00	3.48	15.9		
	13.00	9.55	32.7		
	16.00	20.1	50.6		
	A:	18.90	33.6		
	B:	17.49	58.7		
	C:				
	D:				
ROOT MEAN SQUARE		7.12	9.78		
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25	1	2		
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION/HT: T7351X  
 FORM: 0.91" TH EXTRUSION  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 STRESS RATIO: +0.33  
 FREQUENCY: 20.00 HZ

YIELD STRENGTH:  
 ULT. STRENGTH:  
 SPECIMEN THK: 0.899- 0.900"  
 SPECIMEN WIDTH: 3.100"  
 REFERENCES: AL007

ALUM.  
 ALLOY

7050

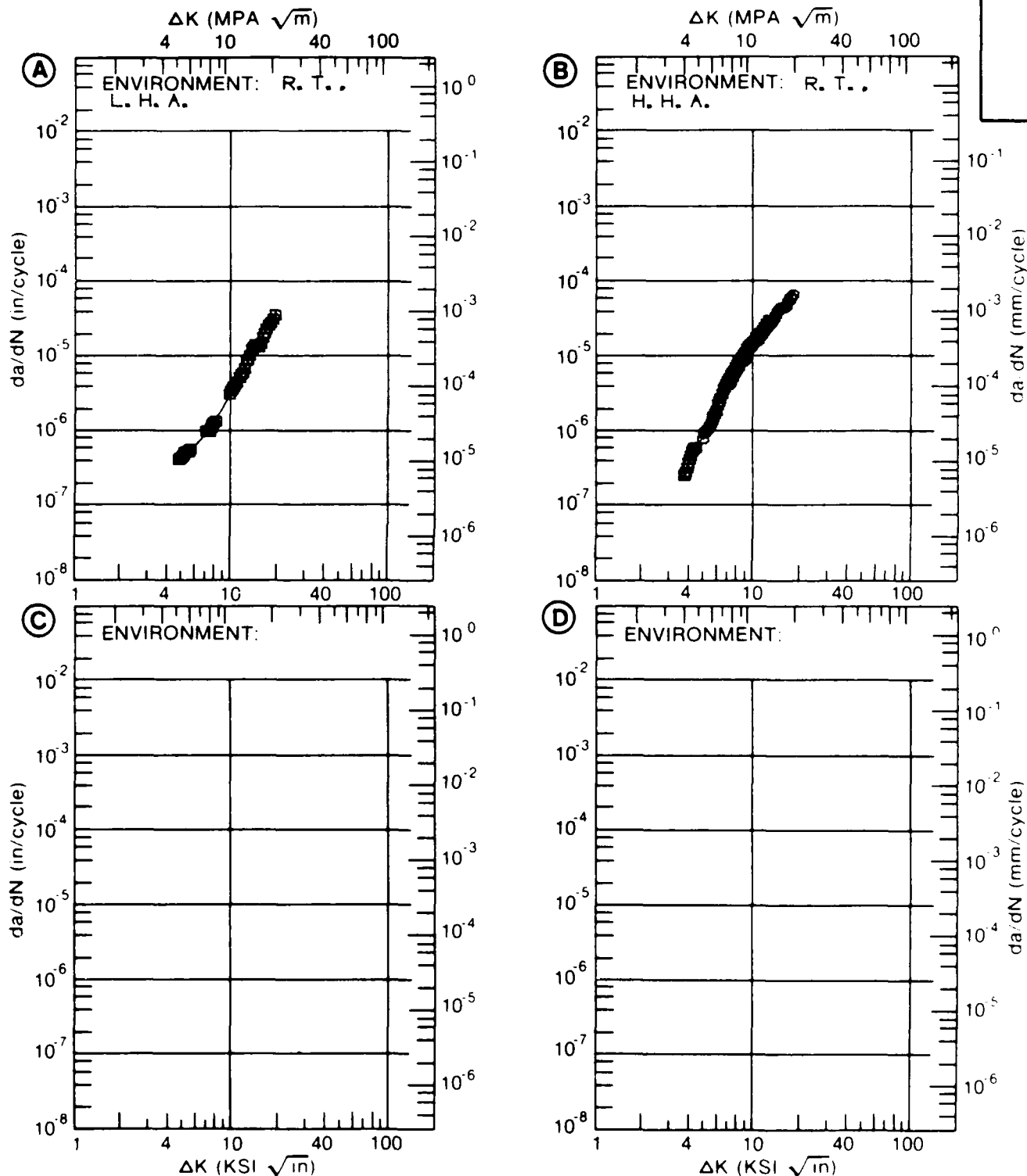


Figure 8.7.3.11

TABLE 8.7.3.12

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.7.3.12 INDICATING EFFECT

## OF ENVIRONMENT

---

MATERIAL: ALUMINUM 7050  
CONDITION: T7351X

---

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R. T. L. H. A.	E= R. T. H. H. A.		
DELTA K MIN	A:	3.70	.201		
	B:	3.72	.376		
	C:				
	D:				
	4.00	.335	.454		
	5.00	1.06	2.25		
	6.00	2.08	4.21		
	7.00	3.25	6.74		
	8.00	4.53	9.95		
	9.00	5.97	13.9		
	10.00	7.69	18.4		
	13.00	16.3	35.7		
	16.00	37.7			
DELTA K MAX	A:	16.93	50.0		
	B:	14.95	49.4		
	C:				
	D:				

---

ROOT MEAN SQUARE 22.77 7.56  
PERCENT ERROR

---



---

LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25 1 2  
SUMMARY 1.25-2.0 1  
(NP/NA) 2.0

---

CONDITION/HT: T7351X  
 FORM: 0.91" TH EXTRUSION  
 SPECIMEN TYPE: CT  
 ORIENTATION: T-L  
 STRESS RATIO: +0.33  
 FREQUENCY: 20.00 HZ

YIELD STRENGTH:  
 ULT. STRENGTH:  
 SPECIMEN THK: 0.899- 0.900"  
 SPECIMEN WIDTH: 3.805"  
 REFERENCES: AL007

ALUM.  
 ALLOY

7050

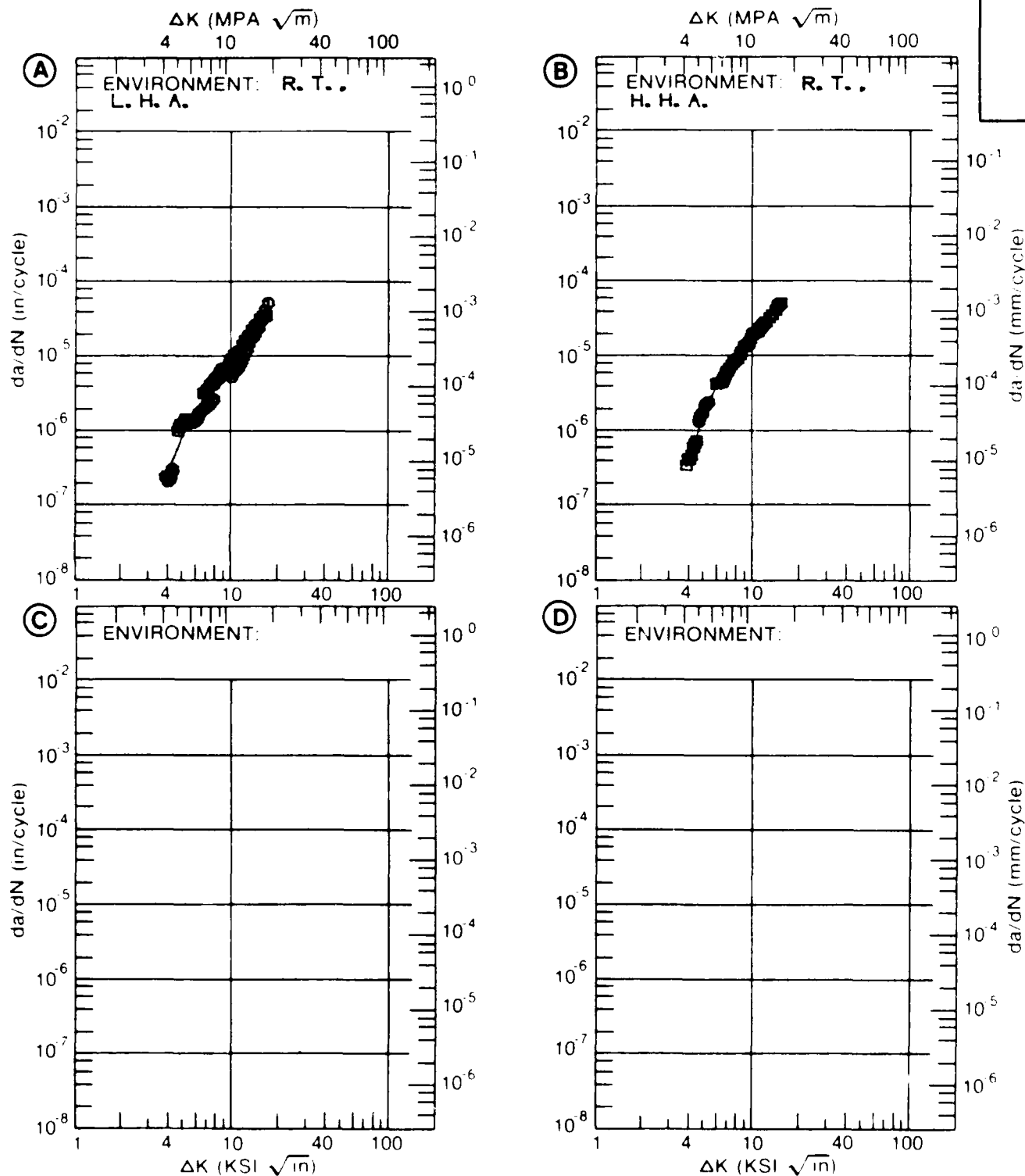


Figure 8.7.3.12

TABLE 8.7.3.13

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.7.3.13 INDICATING EFFECT

OF ENVIRONMENT

MATERIAL: ALUMINUM		7050			
CONDITION: T7351X					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R. T. L. H. A.	E= R. T. H. H. A.		
DELTA K MIN	A:	3.95	.352		
	B:	2.90	.174		
	C:				
	D:				
	3.00		.170		
	3.50		.295		
	4.00	.372	.573		
	5.00	.862	1.41		
	6.00	1.69	2.62		
	7.00	2.97	4.33		
	8.00	4.69	6.83		
	9.00	6.78	10.7		
	10.00	9.90	16.6		
	13.00	64.8	68.2		
DELTA K MAX	A:	13.94	157.		
	B:	14.35	134.		
	C:				
	D:				
ROOT MEAN SQUARE		19.29	12.88		
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25	1	2		
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION/HT: T7351X  
 FORM: 5.00" TH EXTRUSION  
 SPECIMEN TYPE: CT  
 ORIENTATION: T-L  
 STRESS RATIO: +0.33  
 FREQUENCY: 20.00 HZ

YIELD STRENGTH:  
 ULT. STRENGTH:  
 SPECIMEN THK: 0.990- 1.000"  
 SPECIMEN WIDTH: 3.805"  
 REFERENCES: AL007

ALUM.  
 ALLOY

7050

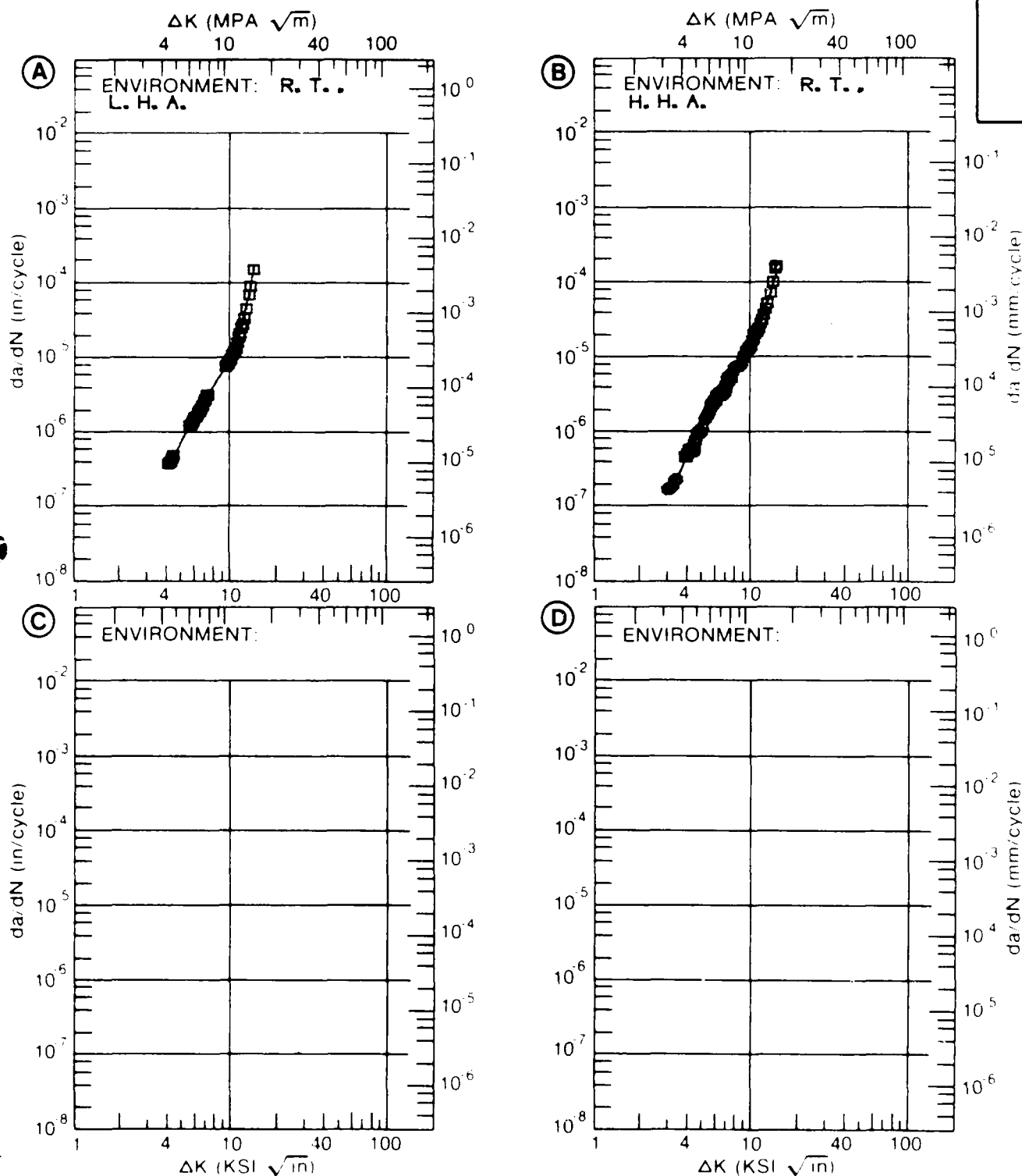


Figure 8.7.3.13

TABLE 8.7.3.14

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.7.3.14 INDICATING EFFECT

OF ENVIRONMENT

MATERIAL: ALUMINUM  
CONDITION: T7351X

7050

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R. T. L. H. A.	E= R. T. H. H. A.		
DELTA K	A: 3.73	486			
MIN	B: 3.76		756		
	C:				
	D:				
	4.00	568	880		
	5.00	810	1.38		
	6.00	1.08	2.47		
	7.00	1.45	4.45		
	8.00	1.96	7.05		
	9.00	2.67	9.43		
	10.00	3.67	11.2		
	13.00	9.91	19.4		
	16.00	55.1	61.0		
DELTA K	A: 16.18	70.0			
MAX	B: 16.55		81.4		
	C:				
	D:				

ROOT MEAN SQUARE 16.45 10.26  
PERCENT ERROR

LIFE 0.0-0.9  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25  
SUMMARY 1.25-2.0  
(NP/NA) >2.0

1

1

CONDITION/HT: T7351X  
 FORM: 5.00" TH EXTRUSION  
 SPECIMEN TYPE: CT  
 ORIENTATION: S-T  
 STRESS RATIO: +0.33  
 FREQUENCY: 20.00 HZ

YIELD STRENGTH:  
 ULT. STRENGTH:  
 SPECIMEN THK: 0.998- 1.000"  
 SPECIMEN WIDTH: 3.805"  
 REFERENCES: AL007

ALUM.  
 ALLOY

7050

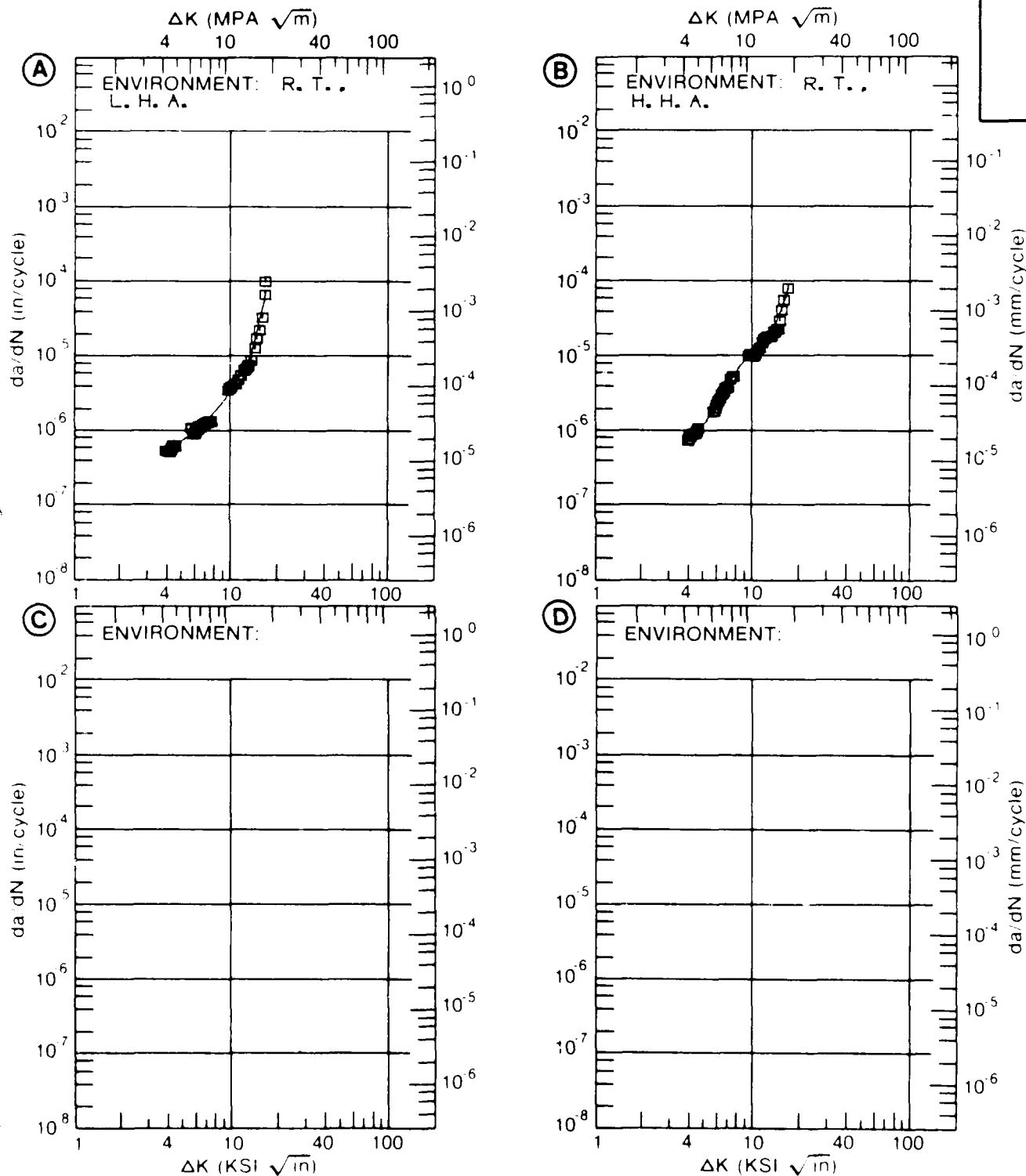


Figure 8.7.3.14



TABLE 8.7.3.15

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.7.3.15 INDICATING EFFECT

OF STRESS RATIO

MATERIAL: ALUMINUM 7050  
CONDITION: T73511  
ENVIRONMENT: R.T. / L.H.A.

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		R=+0.10	R=+0.50		
DELTA K	A: 3.16	0649			
MIN	B: 1.30		.0133		
	C:				
	D:				
	1.60		.0268		
	2.00		.0496		
	2.50		.0865		
	3.00		.138		
	3.50	.0815	.216		
	4.00	.115	.336		
	5.00	.225	.778		
	6.00	.416	1.61		
	7.00	.723	2.93		
	8.00	1.18	4.77		
	9.00	1.83	7.06		
	10.00	2.71	9.88		
	13.00	7.00	23.3		
	16.00	14.5	52.5		
	20.00	32.0			
	25.00	73.3			
	30.00	190.			
DELTA K	A: 31.94	311.			
MAX	B: 19.47		152.		
	C:				
	D:				

ROOT MEAN SQUARE 17.51 19.61  
PERCENT ERROR

LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25  
SUMMARY 1.25-2.0  
(NP/NA) 2.0

CONDITION/HT: T73511  
 FOPM: 1.80" TH EXTRUSION  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 FREQUENCY: 8.00- 50.00 HZ  
 ENVIRONMENT: R. T., L. H. A.

YIELD STRENGTH:  
 ULT. STRENGTH:  
 SPECIMEN THK: 0.249"  
 SPECIMEN WIDTH: 2.500"  
 REFERENCES:AL006

ALUM.  
 ALLOY

7050

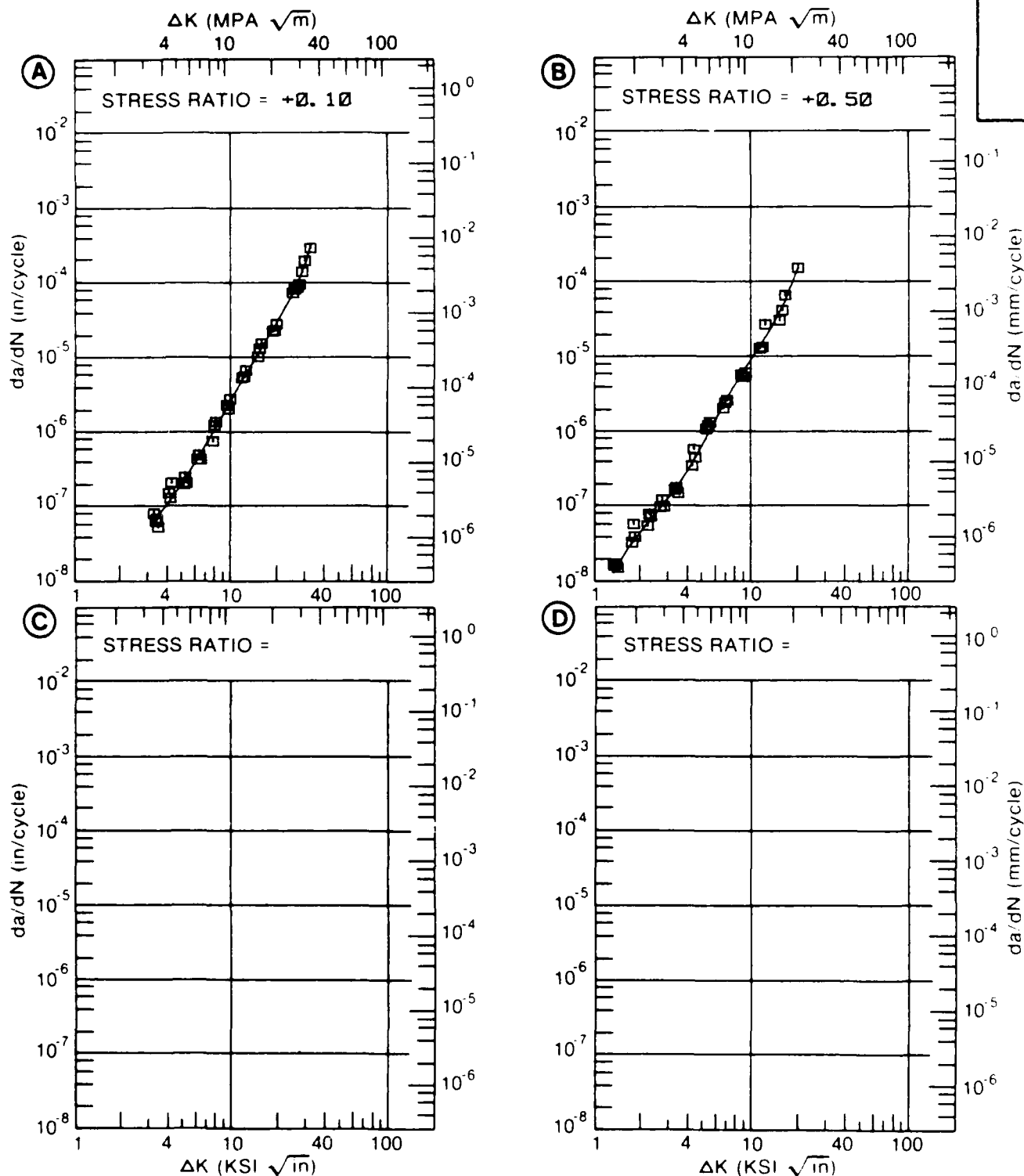


Figure 8.7.3.15

TABLE 8.7.3.16

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.7.3.16 INDICATING EFFECT

## OF STRESS RATIO

MATERIAL: ALUMINUM 7050  
 CONDITION: T73511  
 ENVIRONMENT: R.T., L.H.A.

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		R=+0.33			
DELTA K MIN	A:	4.51	.270		
	B:				
	C:				
	D:				
	5.00	.334			
	6.00	.433			
	7.00	.589			
	8.00	.871			
	9.00	1.34			
	10.00	2.08			
	13.00	7.44			
	16.00	22.8			
DELTA K MAX	A:	17.86	42.1		
	B:				
	C:				
	D:				

ROOT MEAN SQUARE 20.04  
 PERCENT ERROR

LIFE 0.0-0.5  
 PREDICTION 0.5-0.8  
 RATIO 0.8-1.25 3  
 SUMMARY 1.25-2.0  
 (NP/NA) >2.0

CONDITION/HT T73511  
 FORM 1.80" TH EXTRUSION  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 FREQUENCY: 7.50- 15.00 HZ  
 ENVIRONMENT: R. T., L. H. A.

YIELD STRENGTH  
 ULT STRENGTH  
 SPECIMEN THK 1.002- 1.003"  
 SPECIMEN WIDTH 3.100"  
 REFERENCES AL006

ALUM.  
 ALLOY

7050

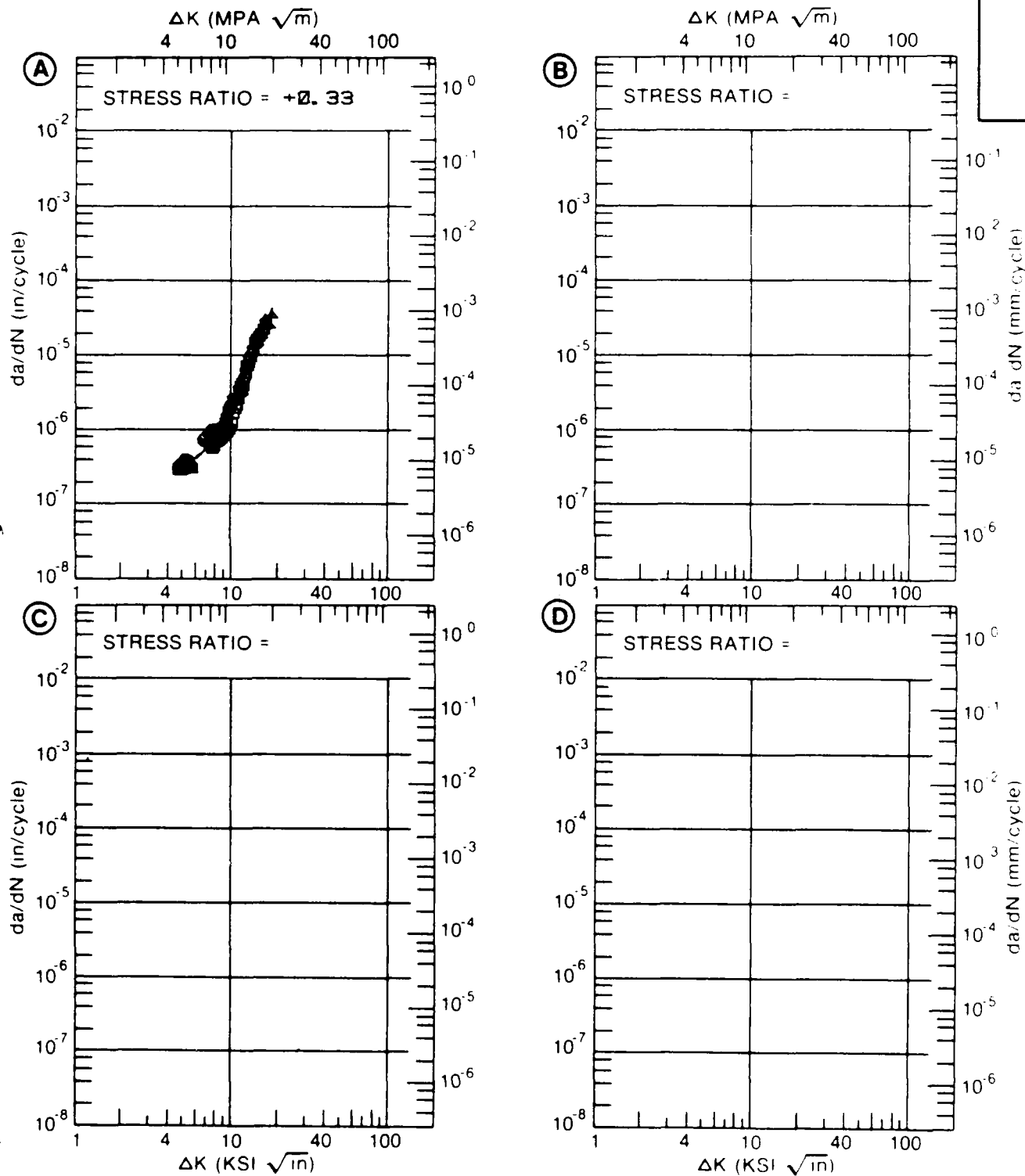


Figure 8.7.3.16

TABLE 8.7.3.17

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.7.3.17 INDICATING EFFECT

OF STRESS RATIO

MATERIAL: ALUMINUM 7050  
CONDITION: T73511  
ENVIRONMENT: R.T., H.H.A.

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		R=+0.33	R=+0.50		
DELTA K MIN	A:	2.72	.121		
	B:	1.33	.00801		
	C:				
	D:				
		1.60	.0307		
		2.00	.0707		
		2.50	.112		
		3.00	.140		
		3.50	.200		
		4.00	.295		
		5.00	.637		
		6.00	1.28		
		7.00	2.34		
		8.00	3.95		
		9.00	6.15		
		10.00	8.94		
		13.00	19.9		
		16.00	31.0		
DELTA K MAX	A:	16.62	32.8		
	B:	16.39	77.2		
	C:				
	D:				

ROOT MEAN SQUARE 14.29 21.97  
PERCENT ERROR

LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25  
SUMMARY 1.25-2.0  
(NP/NA) 2.0

3

3

CONDITION/HT: T73511  
 FORM: 1.80" TH EXTRUSION  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 FREQUENCY: 15.00- 20.00 HZ  
 ENVIRONMENT: R. T., H. H. A.

YIELD STRENGTH:  
 ULT. STRENGTH:  
 SPECIMEN THK: 0.249- 1.000"  
 SPECIMEN WIDTH: 2.500- 3.100"  
 REFERENCES: AL006

ALUM.  
 ALLOY

7050

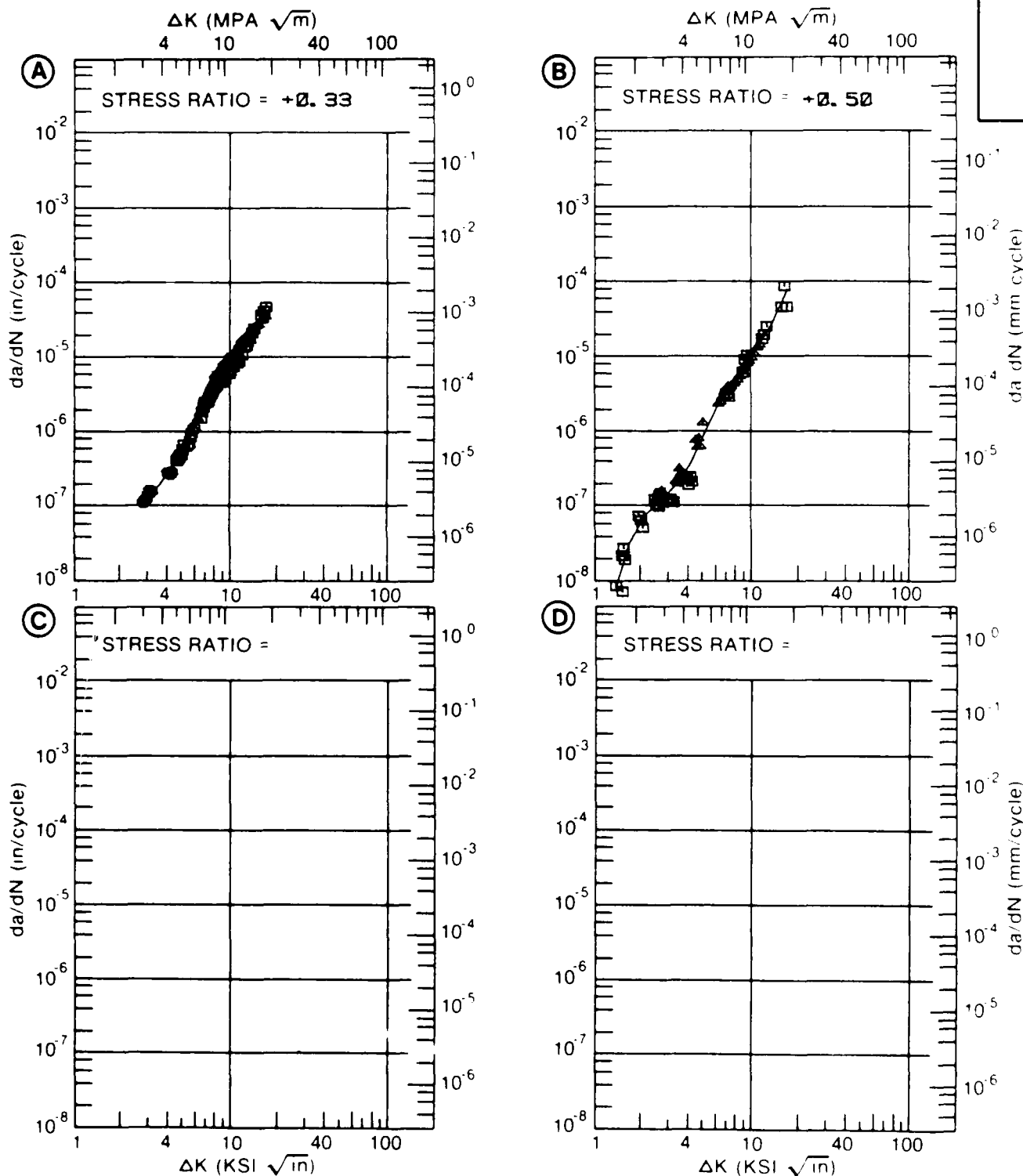


Figure 8.7.3.17

TABLE 8.7.3.18

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTORDATA ASSOCIATED WITH FIGURE 8.7.3.18 INDICATING EFFECT  
OF FREQUENCY

MATERIAL: ALUMINUM 7050  
 CLNDITION: T73511  
 ENVIRONMENT: R T , H II A

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		F(HZ)= 2.00	F(HZ)= 15.00	F(HZ)= 10.00-20.00	F(HZ)= 50.00
DELTA K MIN	A:	7.40	1.76		
	B:	3.31	.119		
	C:	6.68		.796	
	D:	2.62			.011
		3.00			.0268
		3.50	.139		.0528
		4.00	.210		.0783
		5.00	.454		.296
		6.00	.890		
		7.00	1.59	1.11	
		8.00	2.39	2.35	
		9.00	3.69	3.75	
		10.00	5.31	5.16	
		13.00	12.3	10.2	
		16.00	23.0	20.3	
		20.00	45.5	45.5	
		25.00	94.6		
		30.00	183		
		35.00	341		
		40.00	619		
DELTA K MAX	A:	53.47	5381		
	B:	16.26	23.6		
	C:	23.95		80.6	
	D:	5.55			.634

ROOT MEAN SQUARE 14.59 6.94 10.17 21.61  
 PERCENT ERROR

LIFE 0.0-0.5  
 PREDICTION 0.5-0.8  
 RATIO 0.8-1.25 1 1 1  
 SUMMARY 1.25-2.0 1  
 (NP/NA) 2.0

CONDITION/HT: T73511  
 FORM: 1.80" TH EXTRUSION  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 STRESS RATIO: +0.10  
 ENVIRONMENT: R. T., H. H. A.

YIELD STRENGTH:  
 ULT. STRENGTH:  
 SPECIMEN THK: 0.154- 0.249"  
 SPECIMEN WIDTH: 2.500- 3.000"  
 REFERENCES: 86844, AL004, AL006

ALUM.  
 ALLOY

7050

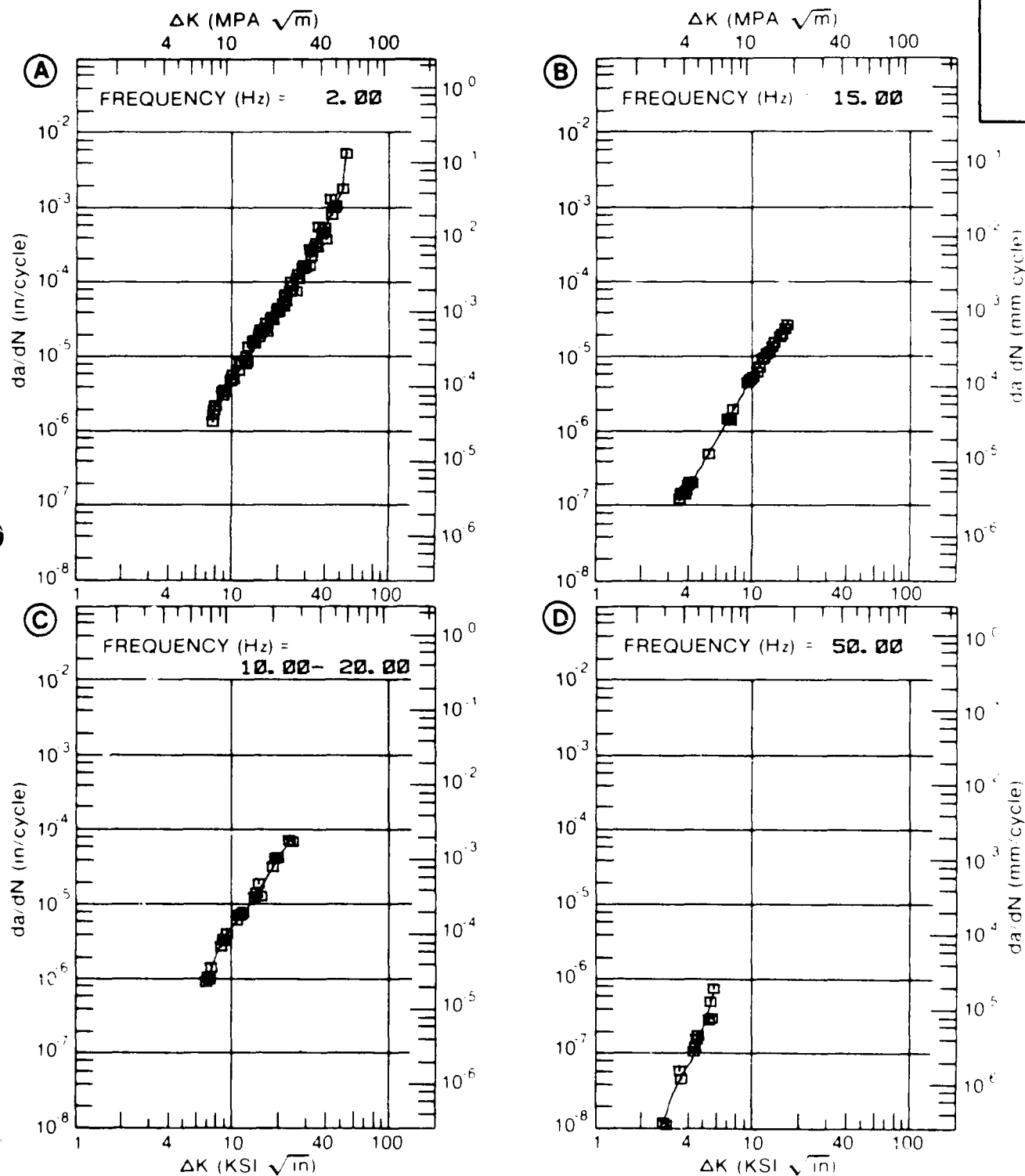


Figure 8.7.3.18



TABLE 8.7.3.19

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.7.3.19 INDICATING EFFECT

OF ENVIRONMENT

MATERIAL: ALUMINUM		7050			
CONDITION: T73511					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R.T. L.H.A.	E= R.T. H.H.A.		
DELTA K MIN	A: 2.58	.094			
	B: 2.75		.038		
	C: 0				
	D:				
	3.00	.124	.0558		
	3.50	.180	.126		
	4.00	.262	.262		
	5.00	.538	.855		
	6.00	1.03	2.03		
	7.00	1.82	3.82		
	8.00	3.01	6.20		
DELTA K MAX	9.00	4.67	9.10		
	10.00	6.84	12.4		
	13.00	16.8	23.9		
	16.00	30.7			
	A: 17.22	37.0			
DELTA K MAX	B: 14.82		31.5		
	C:				
	D:				
ROOT MEAN SQUARE		22.14	17.00		
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25	7	6		
SUMMARY	1.25-2.0		1		
(NP/NA)	2.0				

CONDITION/HT: T73511  
 FORM: 1.80" TH EXTRUSION  
 SPECIMEN TYPE: CT  
 ORIENTATION: T-L  
 STRESS RATIO: +0.33  
 FREQUENCY: 7.50- 20.00 HZ

YIELD STRENGTH:  
 ULT. STRENGTH:  
 SPECIMEN THK: 0.998- 1.004"  
 SPECIMEN WIDTH: 3.805"  
 REFERENCES: AL006, AL004, AL007

ALUM.  
ALLOY

7050

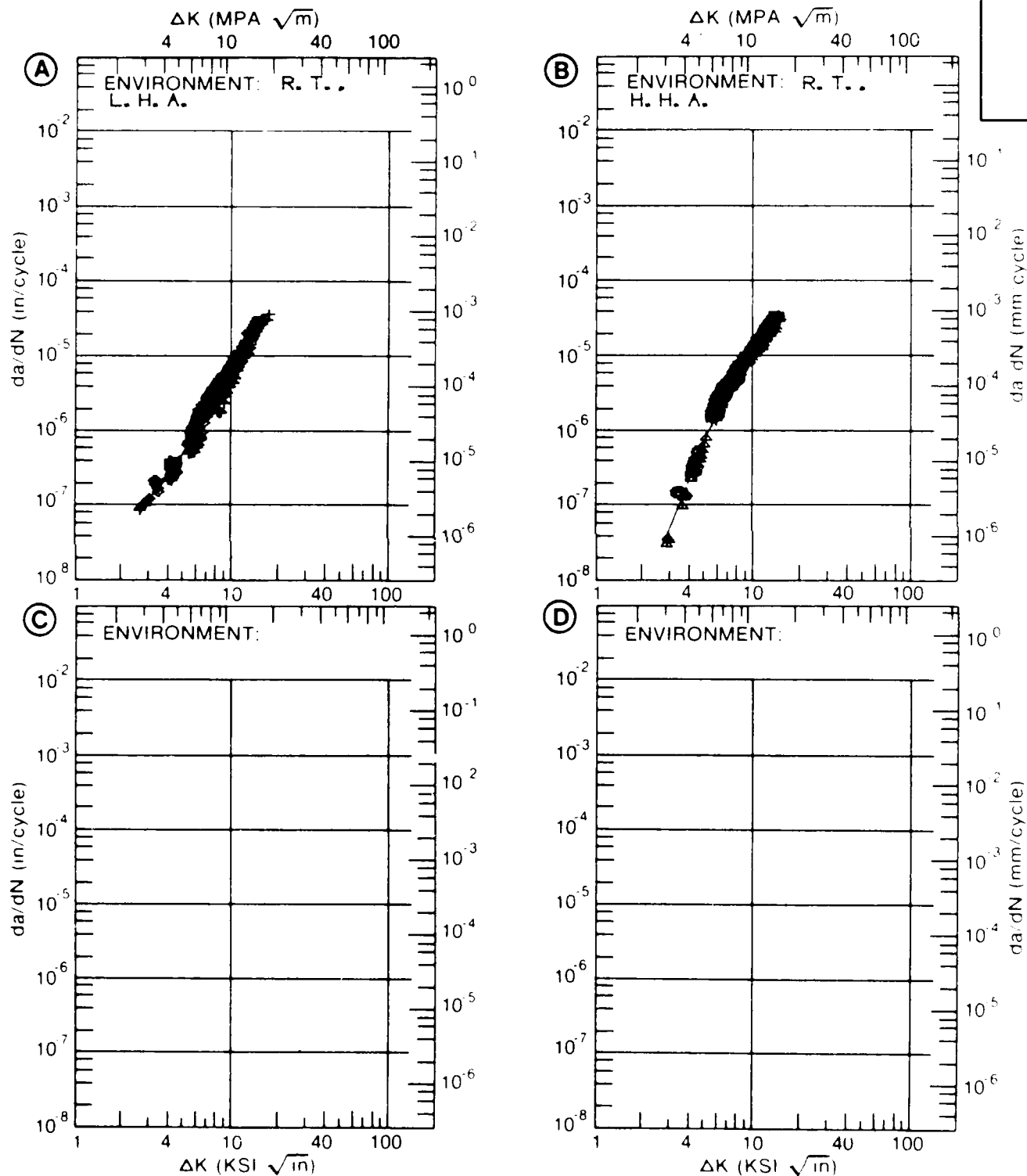


Figure 8.7.3.19

TABLE 8.7.3.20

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.7.3.20 INDICATING EFFECT

OF ENVIRONMENT

MATERIAL: ALUMINUM 7050  
CONDITION: T73511

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R. T. L. H. A.	E= R. T. H. H. A.		
DELTA K MIN	A: 1.83	0.23			
	B: 1.78		0.06		
	C: 64				
	D:				
	2.00	0.319	0.194		
	2.50	0.613	0.650		
	3.00	0.957	1.16		
	3.50	1.36	1.83		
	4.00	1.85	2.96		
	5.00	2.72	7.69		
	6.00	3.46	1.82		
	7.00	1.07	3.79		
	8.00	1.99	7.05		
	9.00	3.71	11.8		
	10.00	6.54	17.9		
	13.00	21.0	40.8		
	16.00	46.8			
DELTA K MAX	A: 18.10	172.			
	B: 15.39		61.2		
	C:				
	D:				
ROOT MEAN SQUARE		18.08	24.27		
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25	1	2		
SUMMARY	1.25-2.0		1		
(NP/NA)	2.0-3.0				

CONDITION HT T73511  
 FORM 1.80" TH EXTRUSION  
 SPECIMEN TYPE CT  
 ORIENTATION T-L  
 STRESS RATIO +0.50  
 FREQUENCY 10.00- 40.00 HZ

YIELD STRENGTH:  
 ULT STRENGTH:  
 SPECIMEN THK 0.243- 0.999"  
 SPECIMEN WIDTH 2.500- 3.805"  
 REFERENCES AL006, AL004

ALUM.  
 ALLOY

7050

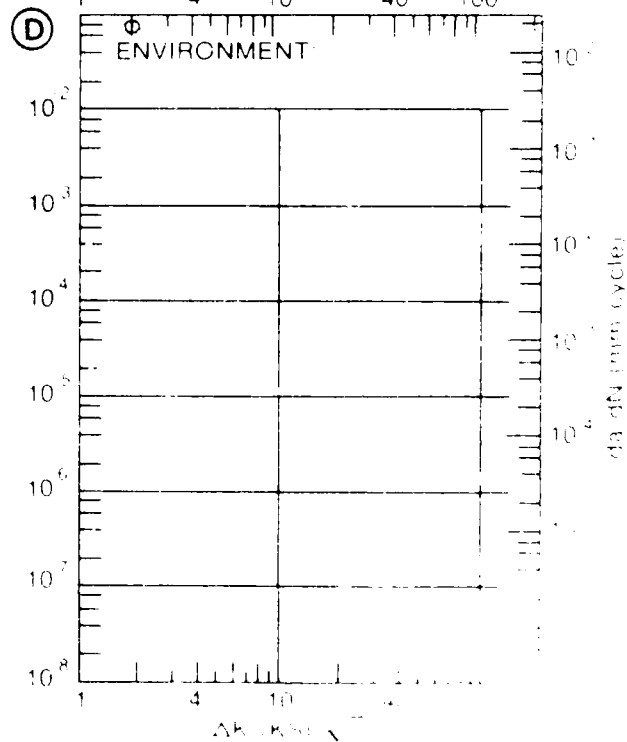
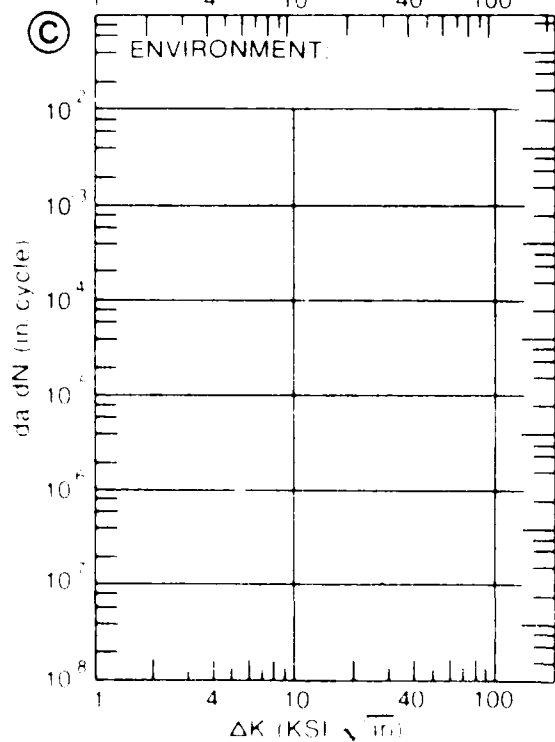
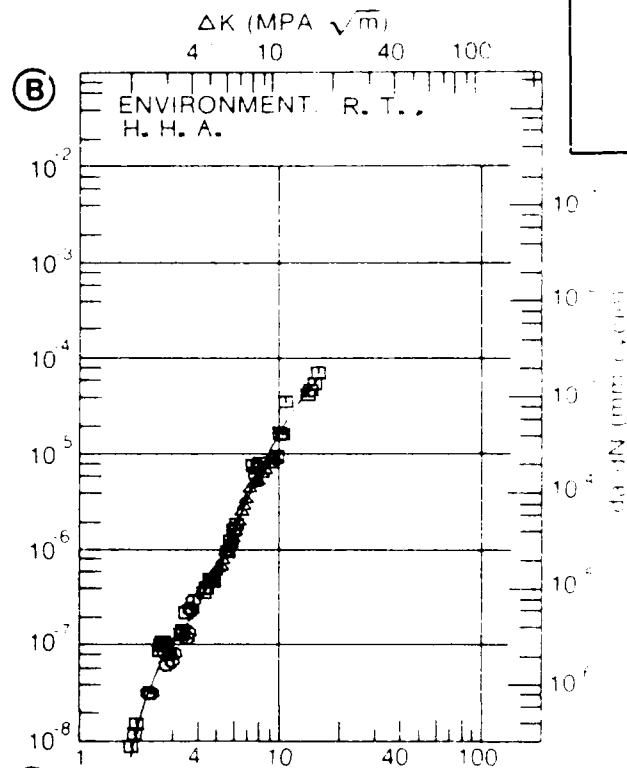
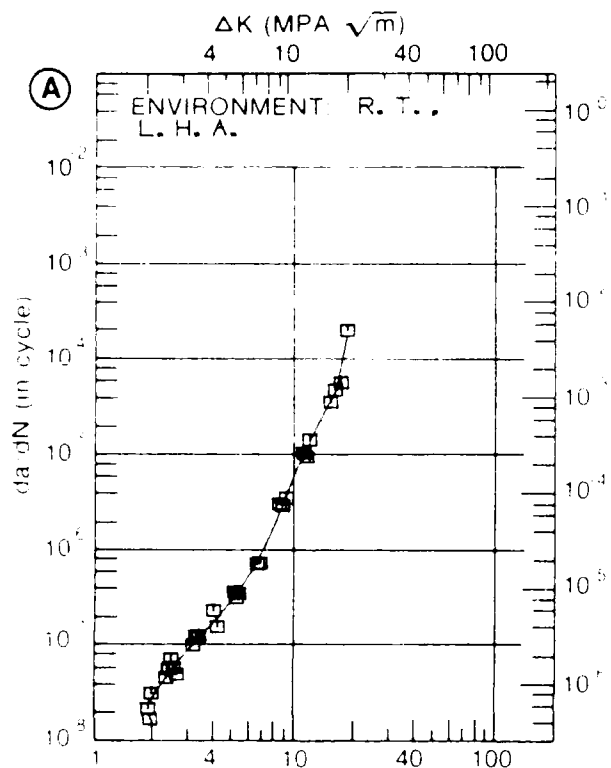


Figure A. 7. 1. 1

7/2/71

TABLE 8.7.3.21

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.7.3.21 INDICATING EFFECT  
OF ENVIRONMENT

MATERIAL: ALUMINUM 7050  
CONDITION: T73511-HIGH PURITY

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R. T. LAB AIR	E= R. T. H. H. A.		
DELTA K	A: 5.87	.505			
MIN	B: 5.85		.524		
	C:				
	D:				
	6.00	.505	.730		
	7.00	.855	2.85		
	8.00	2.24	5.41		
	9.00	4.18	8.53		
	10.00	5.93	12.2		
	13.00	9.22	26.0		
	16.00	26.7	41.8		
DELTA K	A: 16.48	36.0			
MAX	B: 19.25		51.7		
	C:				
	D:				
ROOT MEAN SQUARE		22.13	9.79		
PERCENT ERROR					

LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25  
SUMMARY 1.25-2.0  
(NP/NA) >2.0

CONDITION/HT: T73511-HIGH PURITY  
 FORM: 1.50" TH EXTRUSION  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 STRESS RATIO: +0.10  
 FREQUENCY: 30.00 HZ

YIELD STRENGTH: 72.1 KSI  
 ULT. STRENGTH: 80.3 KSI  
 SPECIMEN THK: 0.625"  
 SPECIMEN WIDTH: 2.550"  
 REFERENCES: WA001

ALUM.  
ALLOY

7050

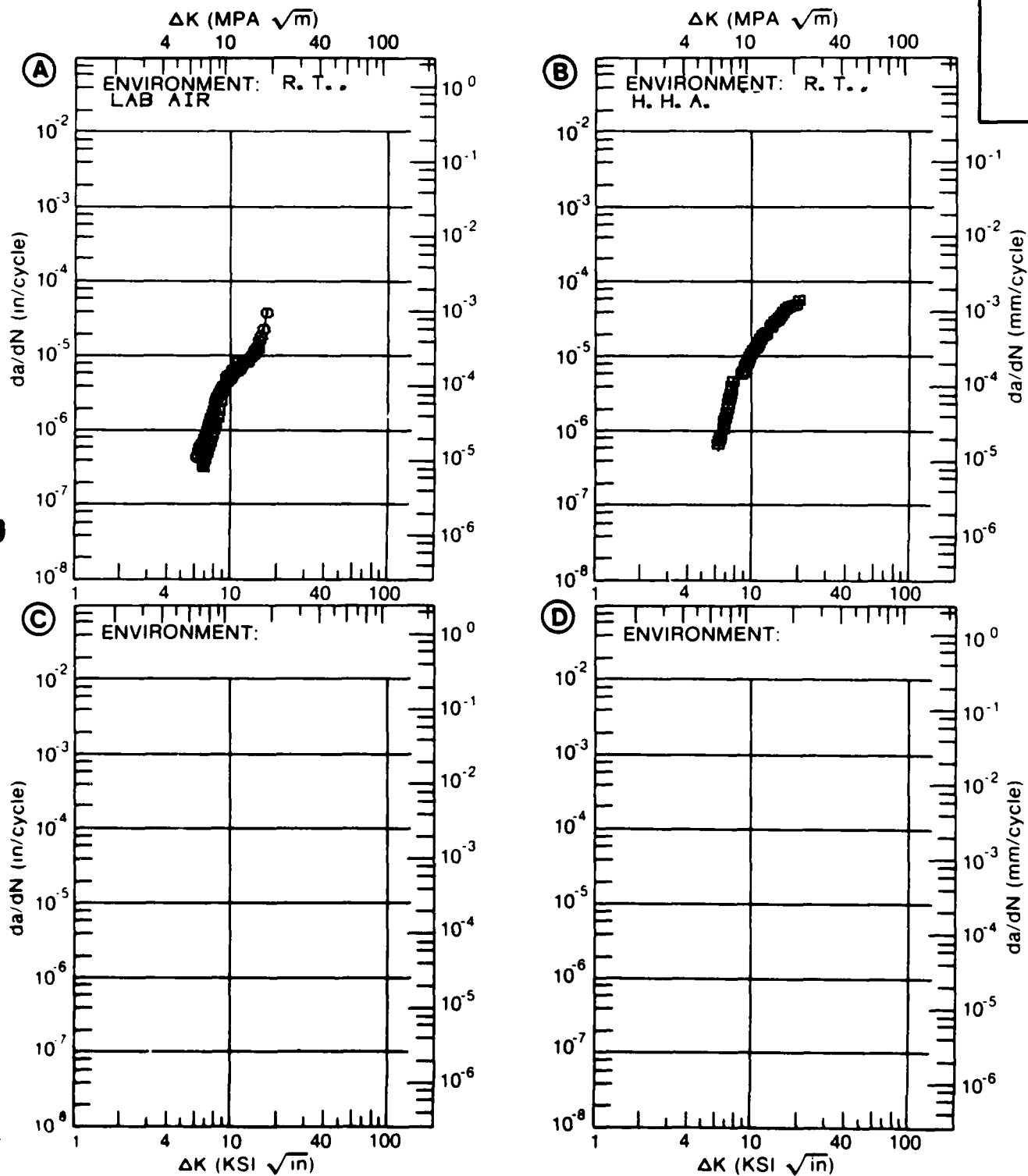


Figure 8.7.3.21

TABLE 8.7.3.22

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.7.3.22 INDICATING EFFECT

OF ENVIRONMENT

MATERIAL: ALUMINUM 7050  
CONDITION: T73511-HIGH PURITY

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		E= R. T. LAB AIR			
DELTA K MIN	A: 6.09	.684			
	B:				
	C:				
	D:				
	7.00	1.26			
	8.00	2.03			
	9.00	2.92			
	10.00	3.97			
	13.00	9.19			
	16.00	23.0			
DELTA K MAX	A: 19.26	73.0			
	B:				
	C:				
	D:				

ROOT MEAN SQUARE 11.73  
PERCENT ERROR

LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25  
SUMMARY 1.25-2.0  
(NP/NA) >2.0

CONDITION/HT: T73511-HIGH PURITY  
 FORM: 1.50" TH EXTRUSION  
 SPECIMEN TYPE: CT  
 ORIENTATION: T-L  
 STRESS RATIO: +0.10  
 FREQUENCY: 30.00 HZ

YIELD STRENGTH: 66.6 KSI  
 ULT. STRENGTH: 75.5 KSI  
 SPECIMEN THK: 0.625"  
 SPECIMEN WIDTH: 2.550"  
 REFERENCES: WA001

ALUM.  
ALLOY

7050

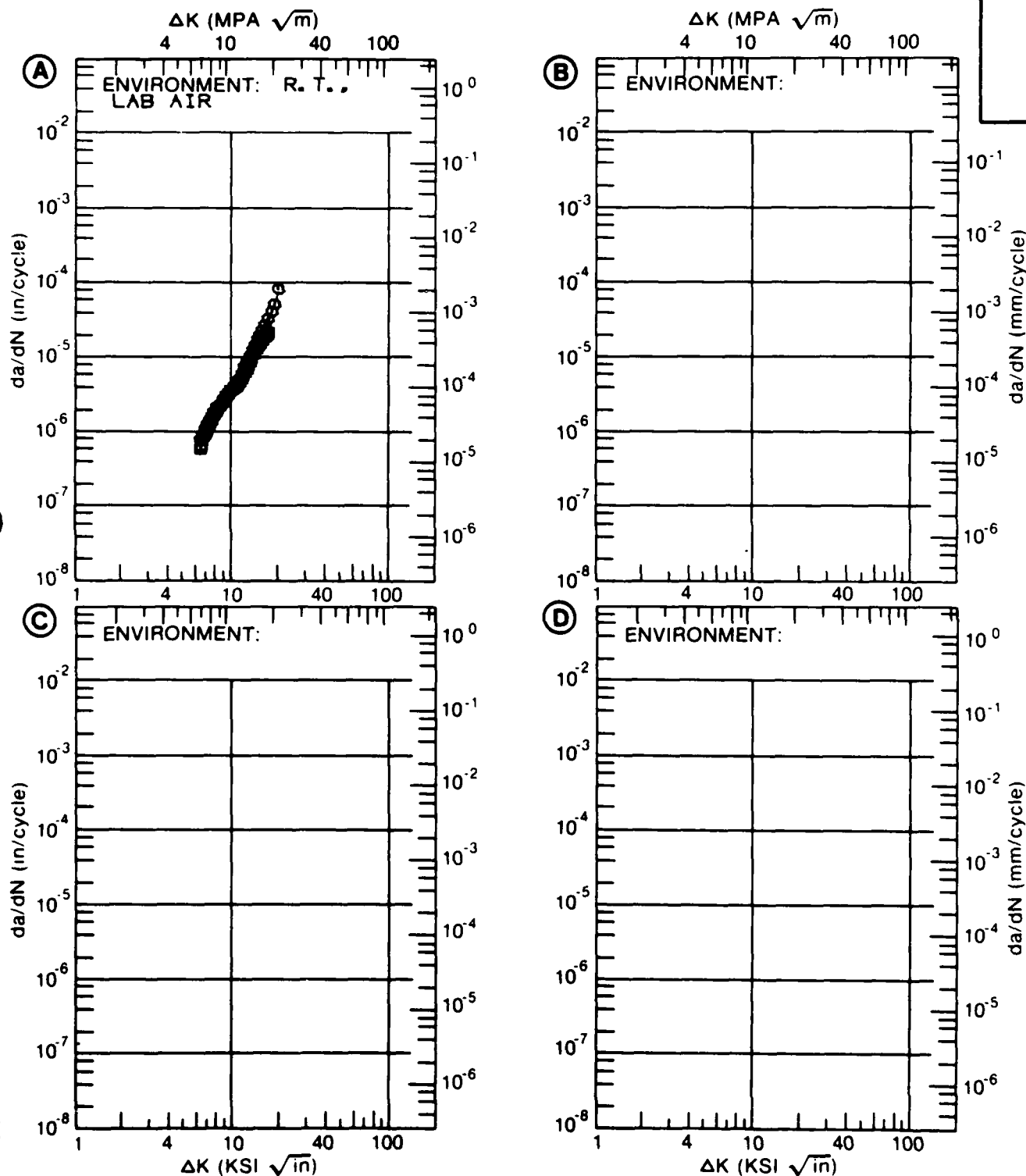


Figure 8.7.3.22



TABLE 8.7.3.23

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.7.3.23 INDICATING EFFECT  
OF ENVIRONMENT

MATERIAL: ALUMINUM 7050  
CONDITION: T736

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R. 1.			
		3. 5% NACL			
DELTA K MIN	A:	8. 11	9. 29		
	B:				
	C:				
	D:				
		9. 00	12. 4		
	10. 00	18. 0			
	13. 00	38. 4			
	16. 00	63. 4			
DELTA K MAX	A:	19. 11	99. 6		
	B:				
	C:				
	D:				
ROOT MEAN SQUARE PERCENT ERROR		4. 77			
LIFE		0. 0-0. 5			
PREDICTION		0. 5-0. 8			
RATIO		0. 8-1. 25			
SUMMARY		1. 25-2. 0			
(NP/NA)		>2. 0			

CONDITION/HT: T736  
 FORM: 1.50" TH FORGING  
 SPECIMEN TYPE:  
 ORIENTATION:  
 STRESS RATIO: +0.10  
 FREQUENCY: 1.00 HZ

YIELD STRENGTH:  
 ULT. STRENGTH:  
 SPECIMEN THK:  
 SPECIMEN WIDTH:  
 REFERENCES: 91332

ALUM.  
 ALLOY

7050

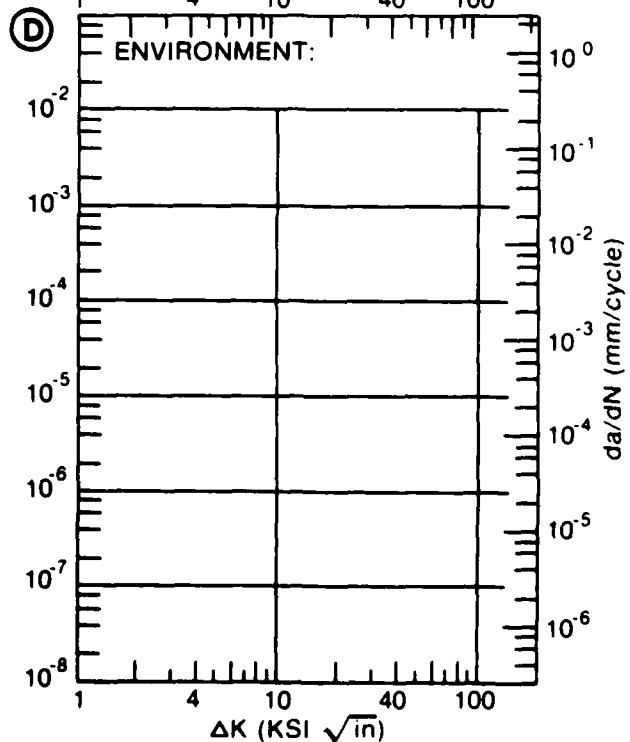
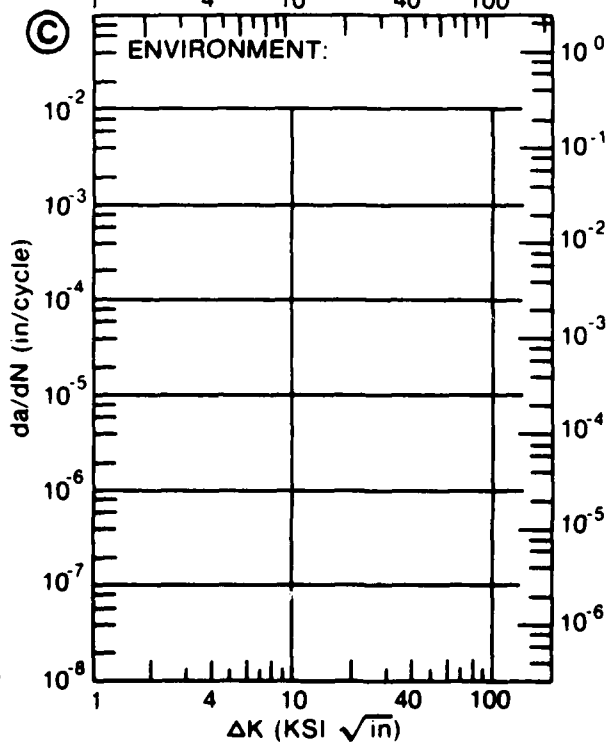
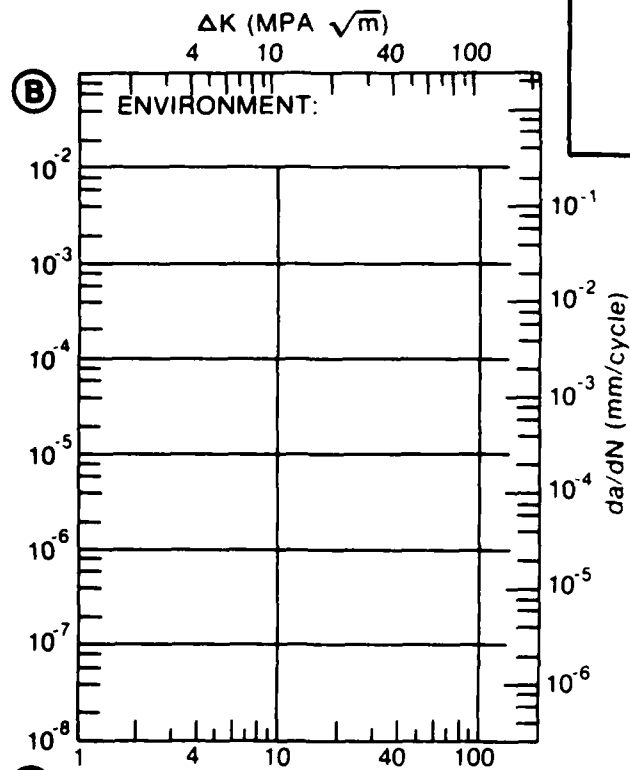
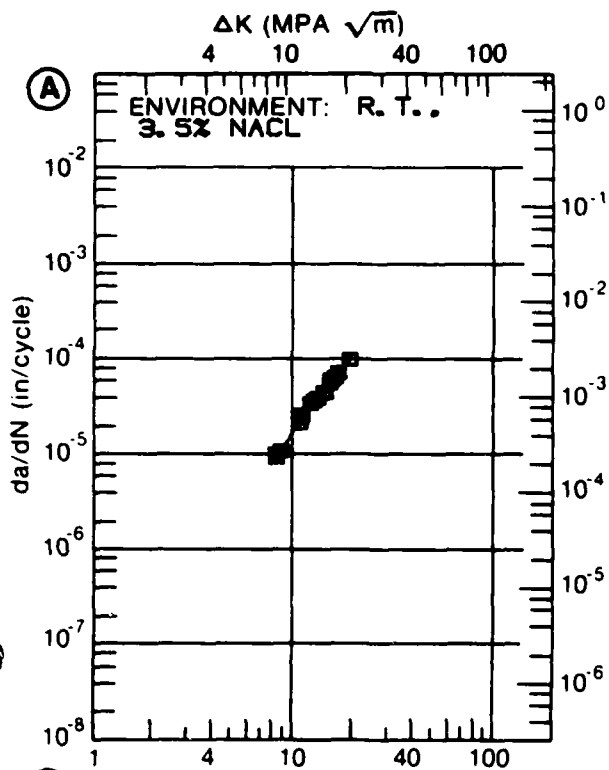


Figure 8.7.3.23

TABLE 8.7.3.24

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.7.3.24 INDICATING EFFECT

OF ENVIRONMENT

MATERIAL: ALUMINUM 7050  
CONDITION: T736

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R. T.			
		DRY AIR 20HZ	LAB AIR 3-10HZ		
DELTA K MIN	A:	10.73	1.02		
	B:	6.44		1.90	
	C:				
	D:				
		7.00		2.94	
		8.00		5.40	
		9.00		8.45	
		10.00		11.9	
		13.00	3.69	23.5	
		16.00	11.1	36.6	
DELTA K MAX	A:	25.91	81.7		
	B:	37.11		447.	
	C:				
	D:				
		7.00		2.94	
		8.00		5.40	
		9.00		8.45	
		10.00		11.9	
		13.00	3.69	23.5	
		16.00	11.1	36.6	
ROOT MEAN SQUARE		7.50	17.53		
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25		2		
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION/HT: T736  
 FORM: 1.50- 3.00" TH FORGING  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 STRESS RATIO: +0.10  
 FREQUENCY:

YIELD STRENGTH: 63.6 KSI  
 ULT. STRENGTH: 72.2 KSI  
 SPECIMEN THK: 1.002"  
 SPECIMEN WIDTH: 7.400"  
 REFERENCES: 91332, NC002

ALUM.  
 ALLOY

7050

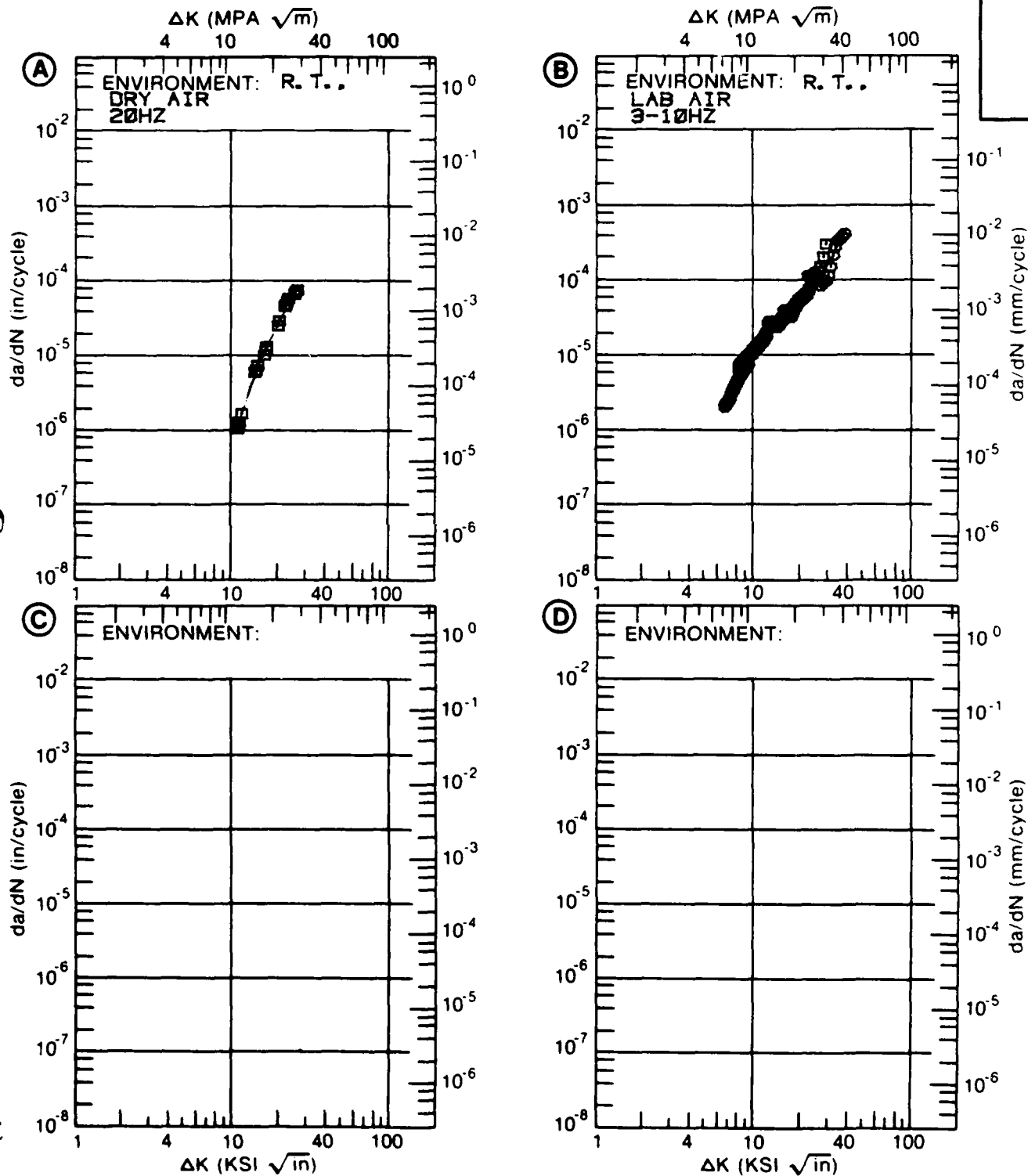


Figure 8.7.3.24

TABLE 8.7.3.25

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.7.3.25 INDICATING EFFECT  
OF ENVIRONMENT

MATERIAL: ALUMINUM		7050			
CONDITION: T736					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R. I.			
		LAB AIR			
DELTA K MIN	A: 7.83	1.59			
	B:				
	C:				
	D:				
	8.00	1.88			
	9.00	4.00			
	10.00	6.75			
	13.00	17.2			
	16.00	34.3			
	20.00	101.			
DELTA K MAX	A: 23.63	355.			
	B:				
	C:				
	D:				
ROOT MEAN SQUARE		11.08			
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25	2			
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION/HT: T736  
 FORM: 3.00" TH FORGING  
 SPECIMEN TYPE: CT  
 ORIENTATION: T-L  
 STRESS RATIO: +0.10  
 FREQUENCY: 10.00 HZ

YIELD STRENGTH: 62.2 KSI  
 ULT. STRENGTH: 71.5 KSI  
 SPECIMEN THK: 1.002"  
 SPECIMEN WIDTH: 7.400"  
 REFERENCES: NC002

ALUM.  
ALLOY

7050

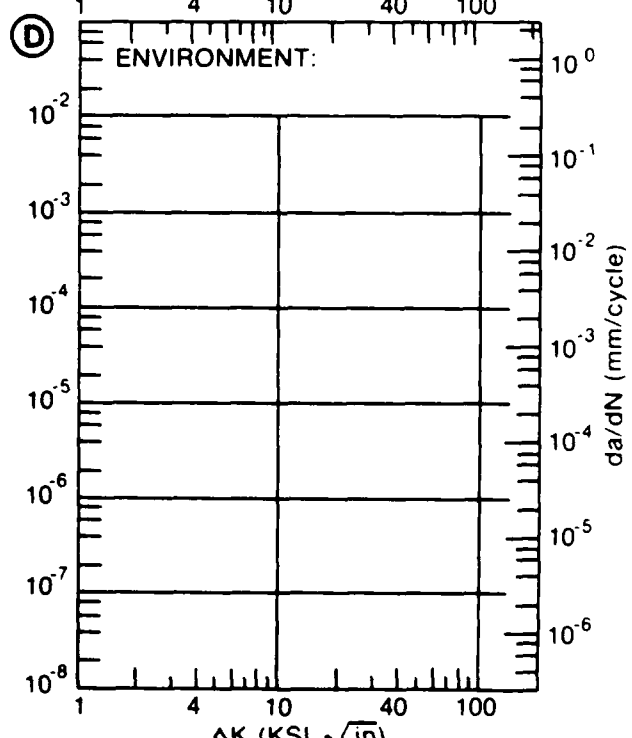
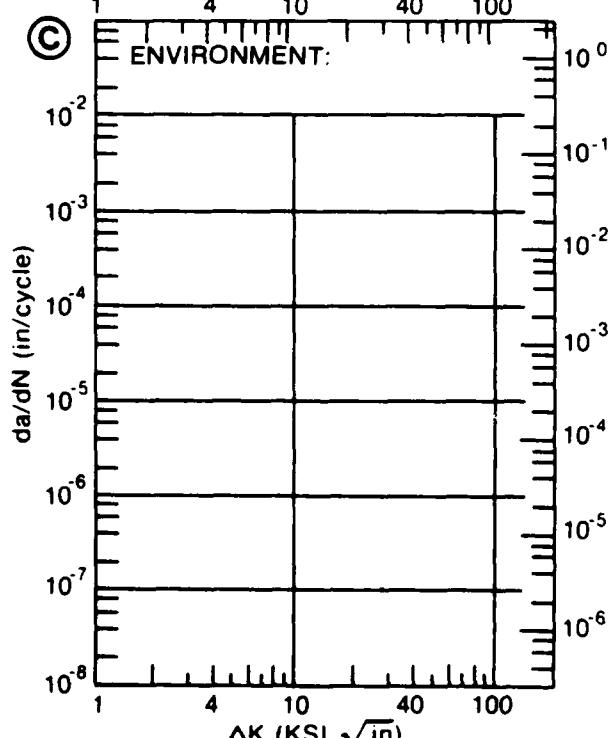
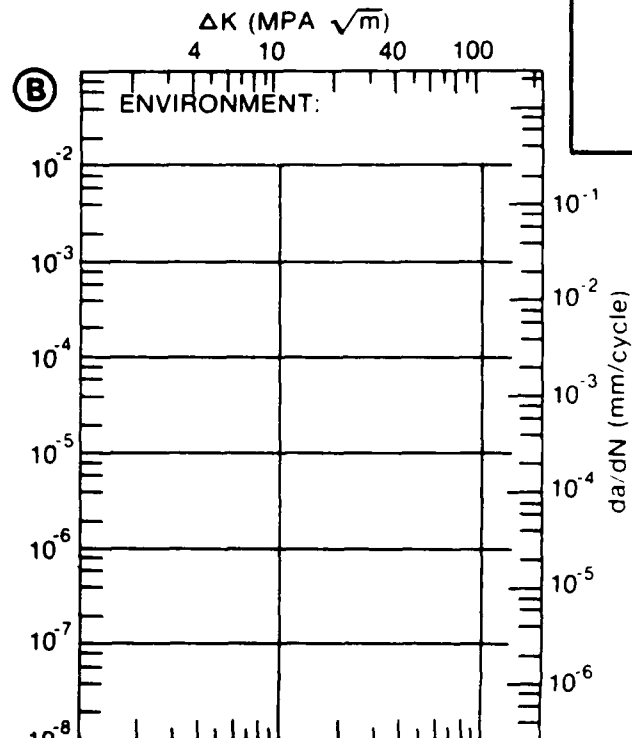
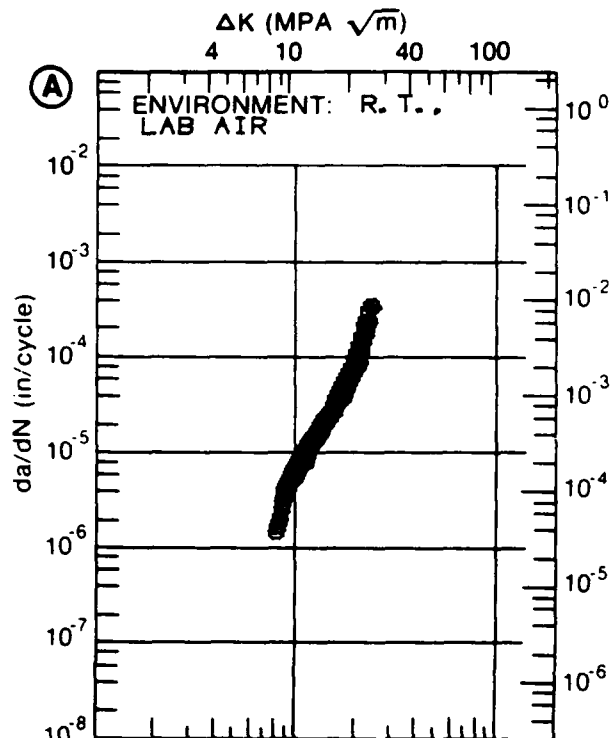


Figure 8.7.3.25

TABLE 8.7.3.26

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.7.3.26 INDICATING EFFECT  
OF FREQUENCY

MATERIAL: ALUMINUM 7050  
CONDITION: T73651  
ENVIRONMENT: R.T., 3.5% NaCl

DELTA K (KSI*IN**1/2)	DA/DN (10**+6 IN./CYCLE)			
	A	B	C	D
	F(HZ)= 5.00 F(HZ)= 25.00			
DELTA K A:				
MIN B:				
C:				
D:				
200.00 :				
DELTA K A:				
MAX B:				
C:				
D:				
ROOT MEAN SQUARE	0.00	0.00		
PERCENT ERROR				
LIFE	0.0-0.5			
PREDICTION	0.5-0.8			
RATIO	0.8-1.25			
SUMMARY	1.25-2.0			
(NP/NA)	>2.0			

CONDITION/HT: T73651  
 FORM: 1.00" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 STRESS RATIO: +0.10  
 ENVIRONMENT: R.T., 3.5% NaCl

YIELD STRENGTH: 70.0 KSI  
 ULT. STRENGTH: 80.5 KSI  
 SPECIMEN THK: 0.750"  
 SPECIMEN WIDTH: 1.500"  
 REFERENCES: 88174

ALUM.  
ALLOY

7050

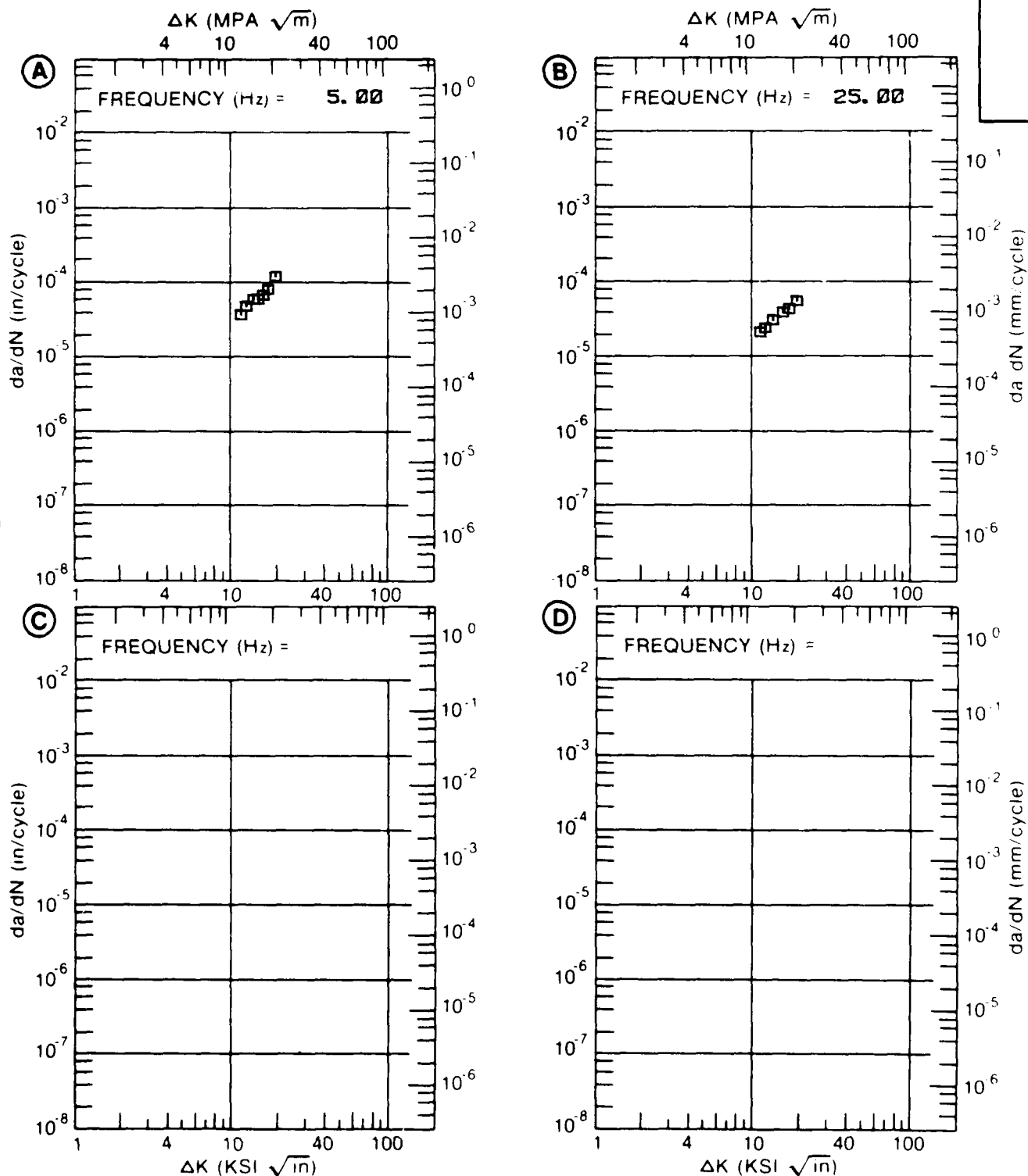


Figure 8.7.3.26



TABLE 8.7.3.27

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.7.3.27 INDICATING EFFECT  
OF ENVIRONMENT

MATERIAL: ALUMINUM		7050			
CONDITION: T73651					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		E= R. T. L. H. A.	E= R. T. H. H. A.	E= R. T. SALT FOG	
DELTA K MIN	A: 5.85	1.99			
	B: 5.81		3.47		
	C: 6.03			8.22	
	D:				
	6.00	2.24	3.88		
	7.00	4.16	6.23	9.63	
	8.00	6.42	8.86	14.6	
	9.00	9.00	11.8	21.6	
	10.00	12.0	15.3	28.5	
	13.00	27.4	31.1	49.3	
	16.00	68.1	65.3		
DELTA K MAX	A: 18.68	173.			
	B: 16.05		66.2		
	C: 15.69			89.1	
	D:				
ROOT MEAN SQUARE PERCENT ERROR		6.72	6.70	9.42	
LIFE PREDICTION RATIO SUMMARY (NP/NA)	0.0-0.3 0.5-0.8 0.8-1.25 1.25-2.0 >2.0	1	1	1	

CONDITION/HT: T73651  
 FORM: 1.00" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: T-L  
 STRESS RATIO: +0.33  
 FREQUENCY: 18.30 HZ

YIELD STRENGTH: 85.4 KSI  
 ULT. STRENGTH: 75.1 KSI  
 SPECIMEN THK: 1.000"  
 SPECIMEN WIDTH: 3.801- 3.805"  
 REFERENCES: AL013

ALUM.  
 ALLOY

7050

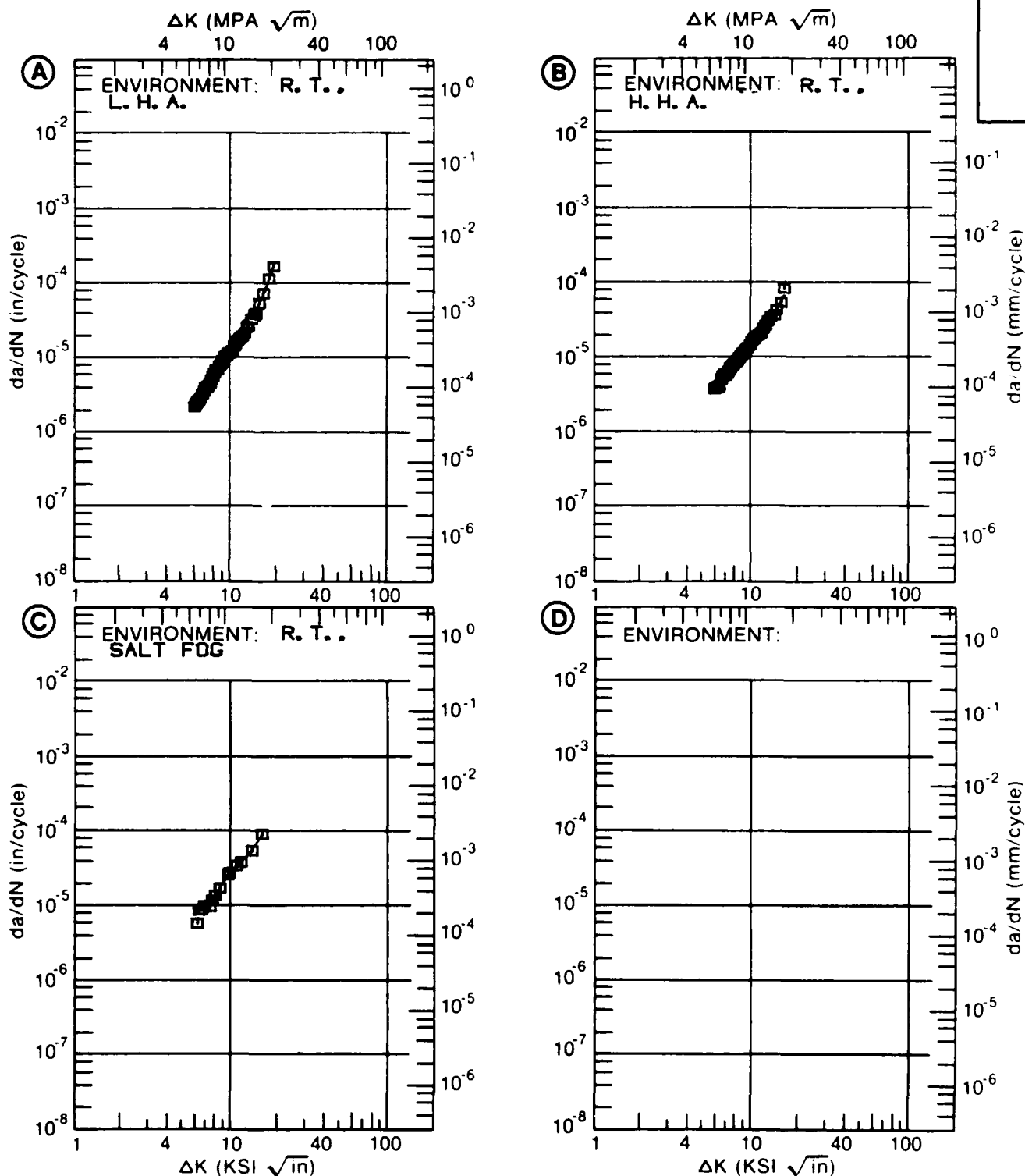


Figure 8.7.3.27

TABLE 1

FATIGUE CRACK GROWTH RATE  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 1 (CONTINUED)

## OF ENVIRONMENT

MATERIAL: ALUMINUM		7050			
CONDITION: T73651					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN / CYCLE)			
		A	B	C	D
		E= R. T. LAB AIR 3-25HZ	E= R. T. S. T. W. 1-10HZ	E= R. T. SIM. SEA WATER 1-10HZ	
DELTA K MIN	A:	4.07	.560		
	B:	4.63	.735		
	C:	4.93		1.38	
	D:				
	5.00	.824	1.12	1.49	
	6.00	1.10	3.75	3.57	
	7.00	1.45	8.19	6.36	
	8.00	1.97	12.0	9.69	
	9.00	2.79	14.8	13.6	
	10.00	4.09	17.5	18.2	
	13.00	11.8	29.9	40.4	
	16.00	24.4	47.7	83.0	
	20.00	48.7	79.3	164.	
	25.00	206.	243.	312.	
DELTA K MAX	A:	29.97	2303.		
	B:	25.70	306.		
	C:	28.53		1334.	
	D:				
ROOT MEAN SQUARE		30.13	13.69	10.61	
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25	5	2	2	
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION/HT T73651  
 FORM 1.00- 3.15"TH PLATE  
 SPECIMEN TYPE CT  
 ORIENTATION L-T  
 STRESS RATIO +0.10  
 FREQUENCY

YIELD STRENGTH: 65.6- 70.0 KSI  
 ULT. STRENGTH: 76.6- 80.5 KSI  
 SPECIMEN THK: 0.750- 1.007"  
 SPECIMEN WIDTH: 1.500- 7.400"  
 REFERENCES: 88174, NC002

ALUM.  
 ALLOY

7050

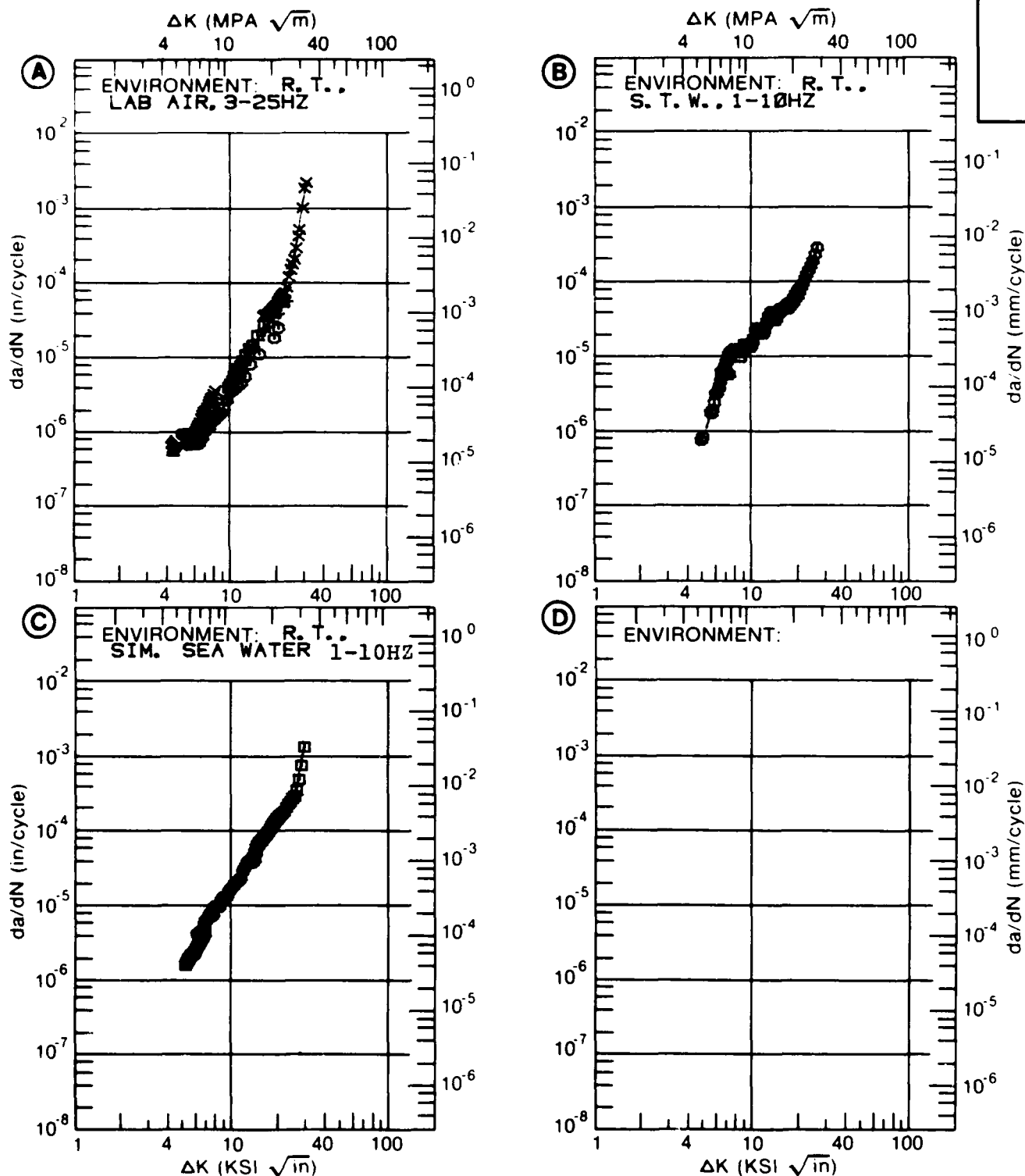


Figure 8.7.3.28

TABLE 8.7.3.29

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.7.3.29 INDICATING EFFECT

OF ENVIRONMENT

MATERIAL: ALUMINUM 7050  
CONDITION: T73651

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		E= R. T. H. H. A.	E= R. T. HHA		
DELTA K	A: 1.96	.014			
MIN	B: 2.72		.100		
	C:				
	D:				
	2.00	.0164			
	2.50	.0600			
	3.00	.157	.144		
	3.50	.334	.257		
	4.00	.613	.431		
	5.00	1.55	1.03		
	6.00	3.09	2.10		
	7.00	5.27	3.76		
	8.00	8.11	6.11		
	9.00	11.6	9.18		
	10.00	15.7	12.9		
	13.00	31.3	27.6		
	16.00	51.1	44.3		
	20.00	82.9	63.3		
	25.00	130.			
	30.00	183.			
DELTA K	A: 30.30	186.			
MAX	B: 20.39		64.8		
	C:				
	D:				

ROOT MEAN SQUARE 21.84 27.63  
PERCENT ERROR

LIFE	0.0-0.5		
PREDICTION	0.5-0.8	1	1
RATIO	0.8-1.25	2	1
SUMMARY	1.25-2.0		1
(NP/NA)	>2.0		

CONDITION/HT: T73651  
 FORM: 1.00- 5.68" TH PLATE  
 SPECIMEN TYPE: WOL  
 ORIENTATION: L-T  
 STRESS RATIO: +0.33  
 FREQUENCY: 25.00 HZ

YIELD STRENGTH: 69.0 KSI  
 ULT. STRENGTH: 77.0 KSI  
 SPECIMEN THK: 0.243- 0.252"  
 SPECIMEN WIDTH: 2.496- 2.550"  
 REFERENCES: AL013

ALUM.  
ALLOY

7050

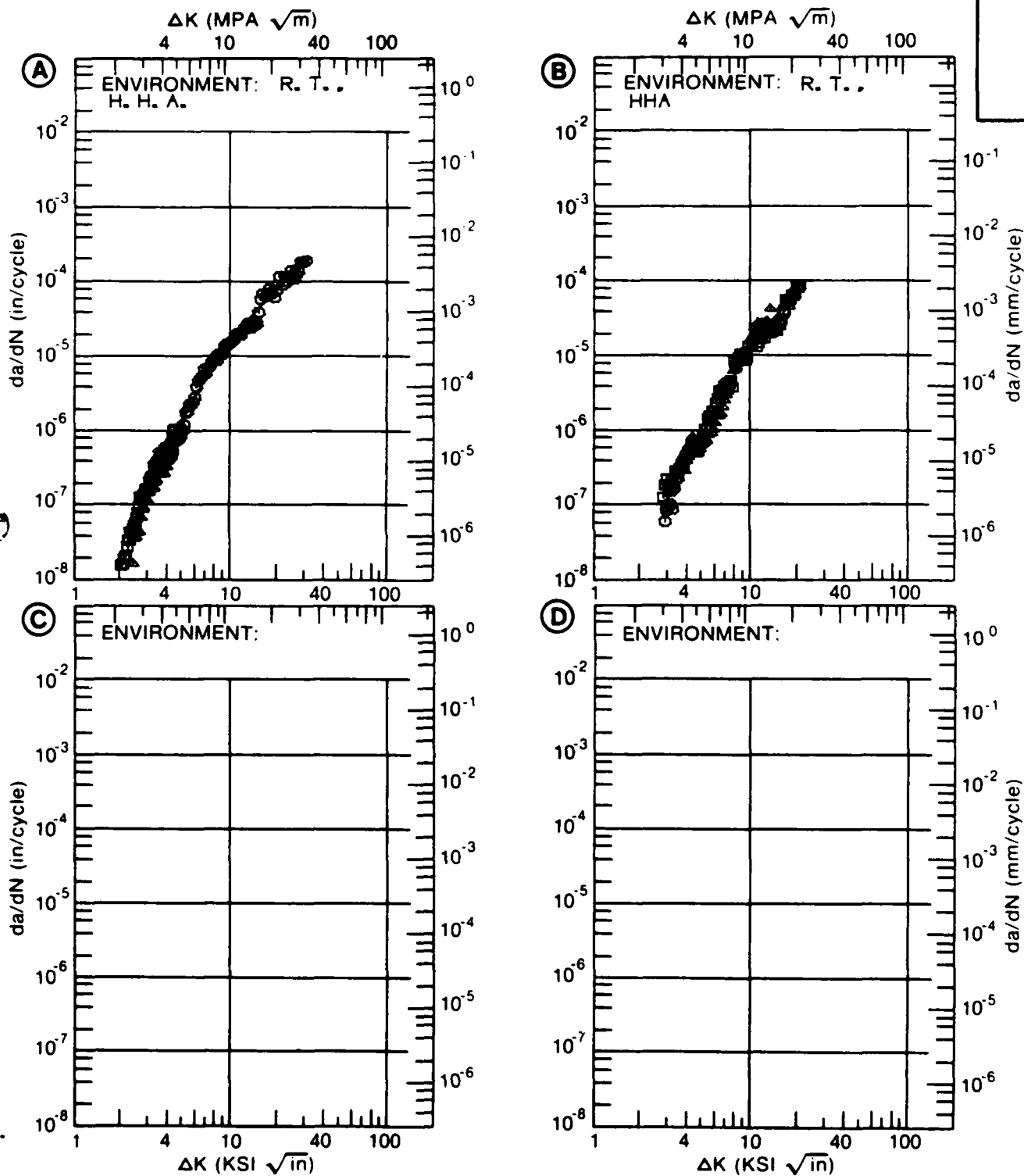


Figure 8.7.3.29

TABLE 8.7.3.30

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.7.3.30 INDICATING EFFECT  
OF ENVIRONMENT

MATERIAL: ALUMINUM 7050  
CONDITION: T73651

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R. I. 3. 5% NACL			
DELTA K MIN	A:	5. 14	1. 21		
	B:				
	C:				
	D:				
		6. 00	2. 74		
		7. 00	7. 22		
		8. 00	12. 2		
DELTA K MAX		9. 00	16. 7		
		10. 00	21. 6		
		13. 00	50. 0		
		16. 00	87. 0		
	A:	17. 87	95. 7		
	B:				
	C:				
	D:				

ROOT MEAN SQUARE 16. 83  
PERCENT ERROR

LIFE 0. 0-0. 5  
PREDICTION 0. 5-0. 8  
RATIO 0. 8-1. 25  
SUMMARY 1. 25-2. 0  
(NP/NA) >2. 0

CONDITION/HT: T73651  
 FORM: 1.13" TH PLATE  
 SPECIMEN TYPE:  
 ORIENTATION:  
 STRESS RATIO: +0.10  
 FREQUENCY: 1.00 HZ

YIELD STRENGTH:  
 ULT. STRENGTH:  
 SPECIMEN THK:  
 SPECIMEN WIDTH:  
 REFERENCES: 91332

ALUM.  
 ALLOY

7050

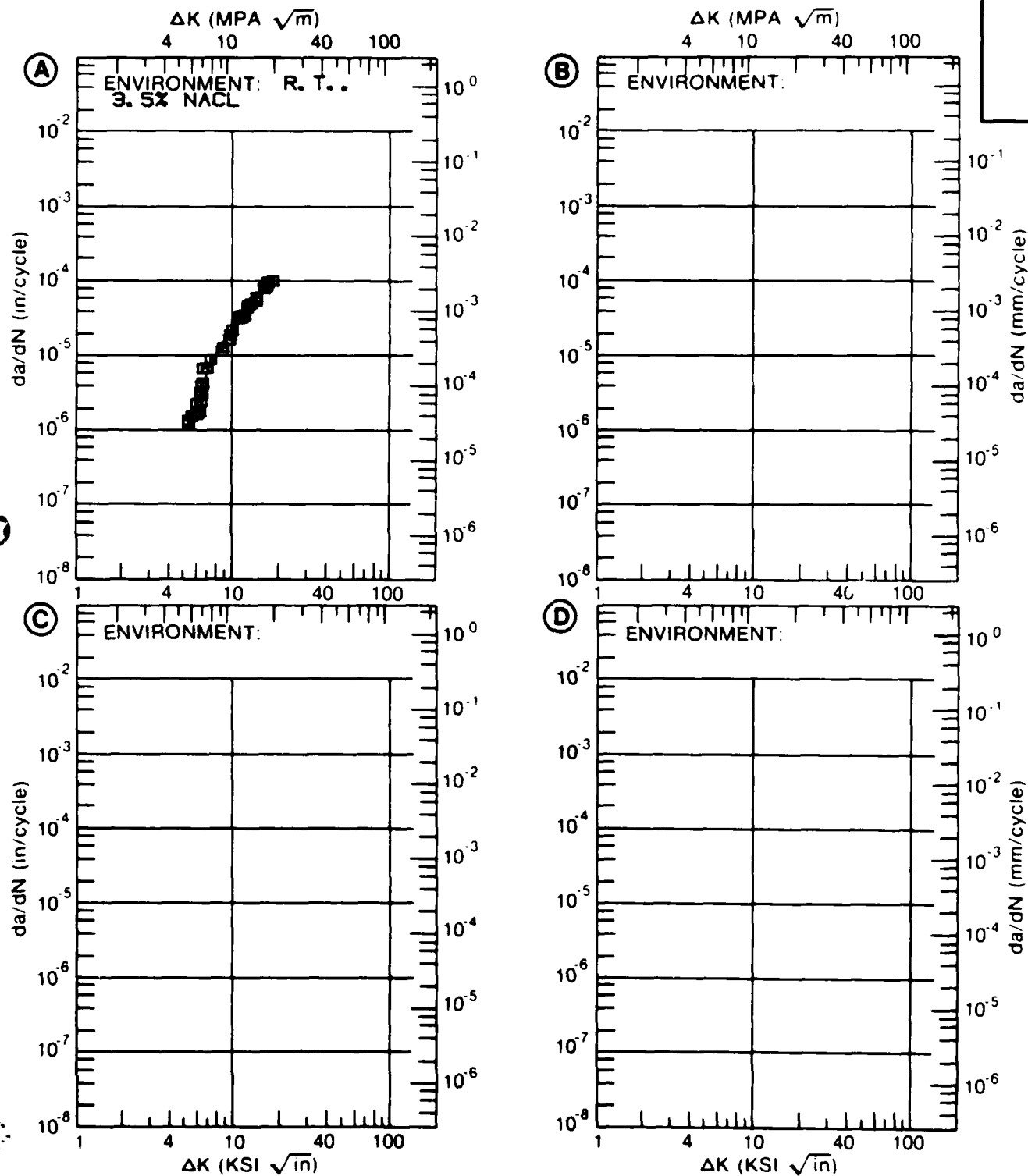


Figure 8.7.3.30



TABLE 8.7.3.31

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.7.3.31 INDICATING EFFECT  
OF ENVIRONMENT

MATERIAL: ALUMINUM 7050  
CONDITION: T73651

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		E- R. T. DRY AIR			
DELTA K MIN	A:	8.61	5.97		
	B:				
	C:				
	D:				
		9.00	6.99		
		10.00	9.52		
		13.00	16.6		
		16.00	26.3		
DELTA K MAX	A:	18.51	36.0		
	B:				
	C:				
	D:				

ROOT MEAN SQUARE 6.14  
PERCENT ERROR

LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25  
SUMMARY 1.25-2.0  
(NP/NA) >2.0

CONDITION/HT: T73651  
 FORM: 1.13" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 STRESS RATIO: +0.10  
 FREQUENCY: 20.00 HZ

YIELD STRENGTH:  
 ULT. STRENGTH:  
 SPECIMEN THK:  
 SPECIMEN WIDTH:  
 REFERENCES: 91332

ALUM.  
ALLOY

7050

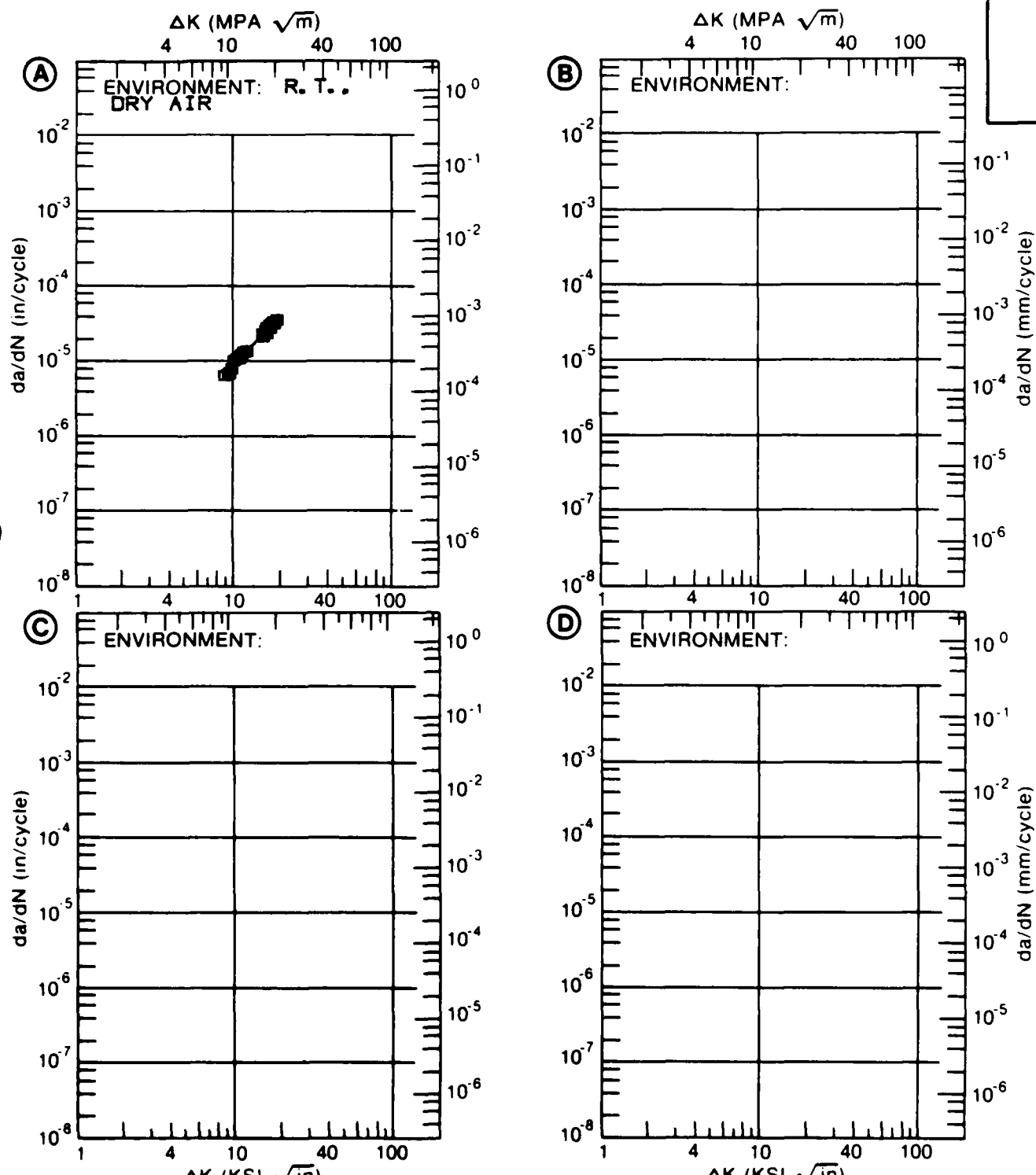


Figure 8.7.3.31

TABLE 8.7.3.32

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.7.3.32 INDICATING EFFECT

OF STRESS RATIO

MATERIAL: ALUMINUM 7050  
CONDITION: T73651  
ENVIRONMENT: R.T., LAB AIR

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		R=+0.10			
DELTA K MIN	A:	7.48	3.25		
	B:				
	C:				
	D:				
		8.00	4.07		
		9.00	5.80		
		10.00	7.68		
		13.00	14.3		
		16.00	24.0		
		20.00	47.3		
		25.00	119.		
DELTA K MAX	A:	26.80	169.		
	B:				
	C:				
	D:				

ROOT MEAN SQUARE 13.13  
PERCENT ERROR

LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25 1  
SUMMARY 1.25-2.0  
(NP/NA) >2.0

CONDITION/HT: T73651  
 FORM: 3.15" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 FREQUENCY: 5.00- 10.00 HZ  
 ENVIRONMENT: R.T., LAB AIR

YIELD STRENGTH: 65.6 KSI  
 ULT. STRENGTH: 76.6 KSI  
 SPECIMEN THK: 1.005"  
 SPECIMEN WIDTH: 7.400"  
 REFERENCES: NC002

ALUM.  
ALLOY

7050

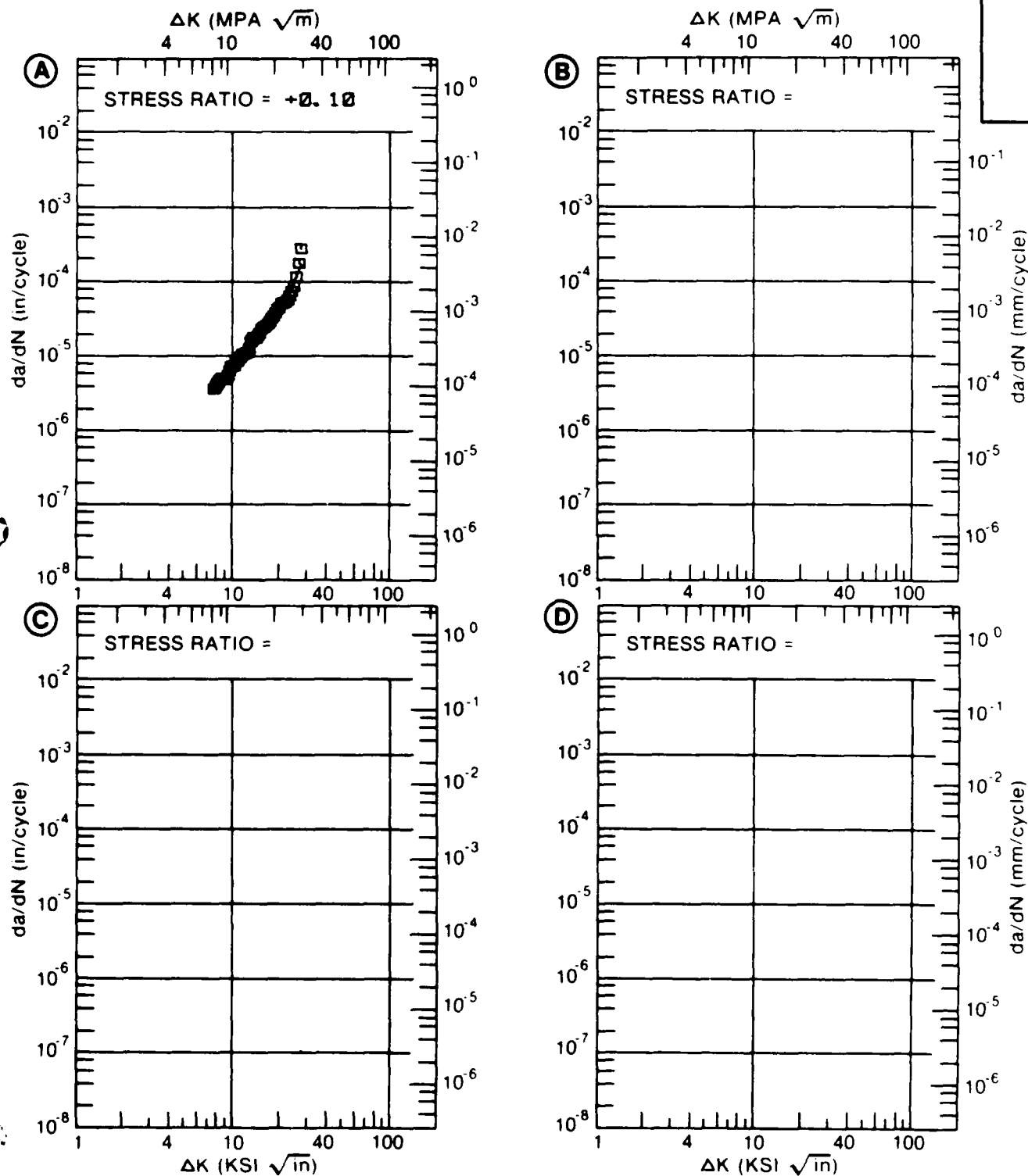


Figure 8.7.3.32

TABLE 8.7.3.33

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.7.3.33 INDICATING EFFECT  
OF ENVIRONMENT

MATERIAL: ALUMINUM		7050			
CONDITION: T73651					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R. T. LAB AIR	E= R. T. SIM. SEA WATER	E= R. T. S. T. W.	
DELTA K	A: 5.86	1.01			
MIN	B: 4.80		1.70		
	C: 4.87			.993	
	D:				
	5.00		1.98	1.16	
	6.00	1.10	3.75	3.45	
	7.00	2.36	6.18	6.90	
	8.00	4.17	9.29	10.1	
	9.00	6.24	13.2	12.9	
	10.00	8.45	17.8	15.9	
	13.00	15.7	37.8	30.5	
	16.00	25.5	69.5	55.0	
	20.00	49.4	140.	97.1	
	25.00	129.	304.	195.	
	30.00	1504.			
DELTA K	A: 30.00	1504.			
MAX	B: 27.76		452.		
	C: 29.35			821.	
	D:				
ROOT MEAN SQUARE		16.60	7.81	24.18	
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25	2	2	3	
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION/HT: T73651  
 FORM: 3.15" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: T-L  
 STRESS RATIO: +0.10  
 FREQUENCY: 1.00- 10.00 HZ

YIELD STRENGTH: 69.0 KSI  
 ULT. STRENGTH: 77.2 KSI  
 SPECIMEN THK: 1.002- 1.005"  
 SPECIMEN WIDTH: 7.400"  
 REFERENCES: NC002

ALUM.  
 ALLOY

7050

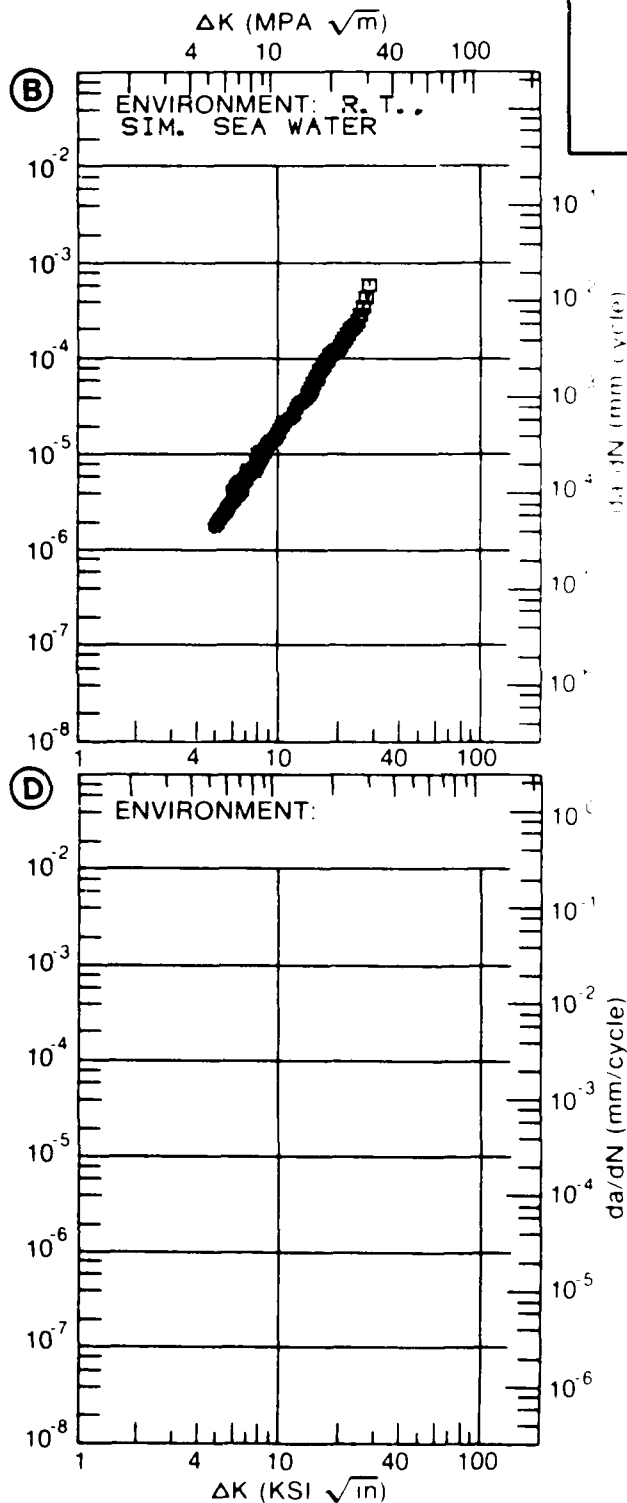
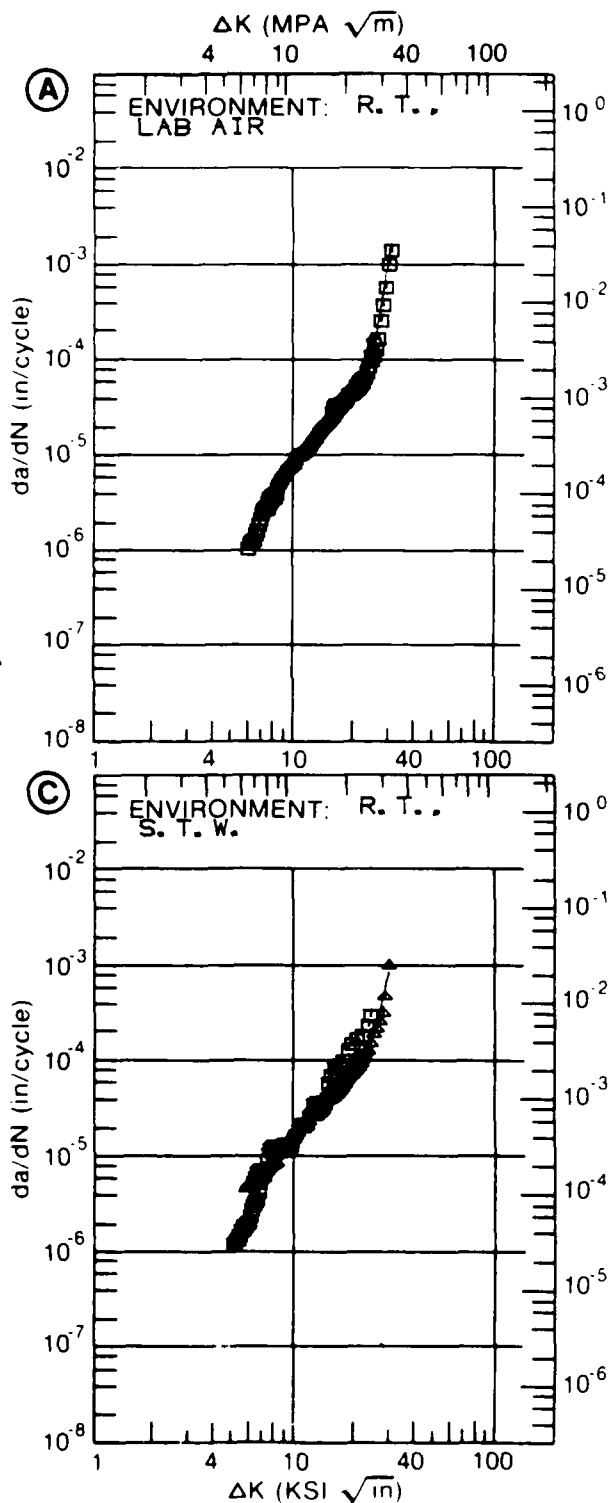


Figure 8.7.3.33

TABLE 8.7.3.34

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.7.3.34 INDICATING EFFECT

OF ENVIRONMENT

MATERIAL: ALUMINUM		7050			
CONDITION: T73651					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		E= R. T. LAB AIR	E= R. T. SIM. SEA WATER		
DELTA K MIN	A:	5.68	1.22		
	B:	4.47	.967		
	C:				
	D:				
	5.00		1.55		
	6.00	1.29	3.25		
	7.00	1.83	5.87		
	8.00	2.87	9.50		
	9.00	4.49	14.2		
	10.00	6.70	20.0		
	13.00	16.3	46.2		
	16.00	28.3	90.2		
	20.00	102.	191.		
DELTA K MAX	A:	23.60	453.		
	B:	21.33	238.		
	C:				
	D:				
ROOT MEAN SQUARE		15.05	25.79		
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25	2	2		
SUMMARY	1.25-2.0		1		
(NP/NA)	>2.0				

CONDITION/HT: T73651  
 FORM: 3.15" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: S-T  
 STRESS RATIO: +0.10  
 FREQUENCY: 1.00- 10.00 HZ

YIELD STRENGTH: 64.3 KSI  
 ULT. STRENGTH: 74.5 KSI  
 SPECIMEN THK: 0.499- 0.500"  
 SPECIMEN WIDTH: 3.000"  
 REFERENCES: NC002

ALUM.  
ALLOY

7050

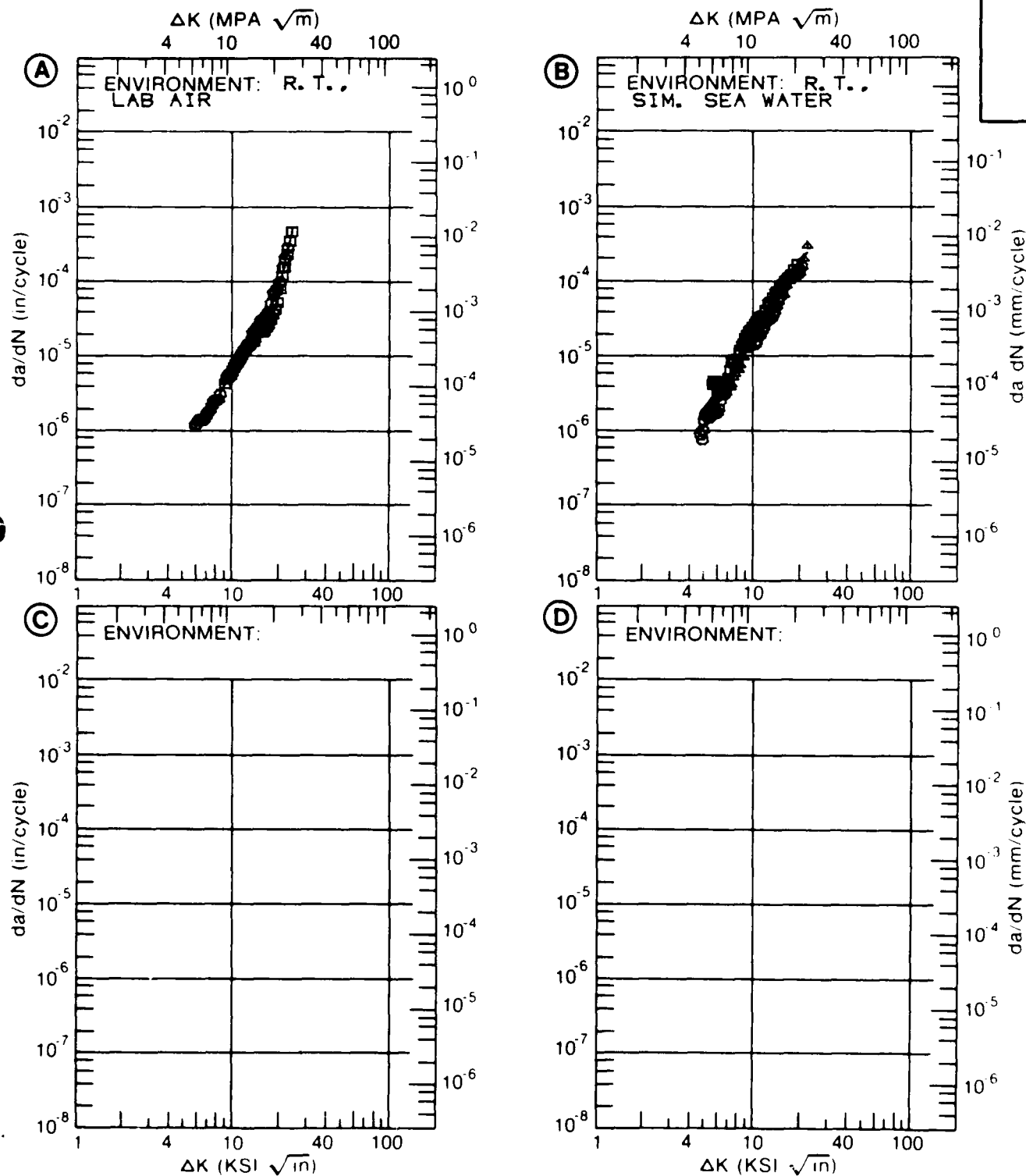


Figure 8.7.3.34



TABLE 8.7.3.35

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.7.3.35 INDICATING EFFECT

OF STRESS RATIO

MATERIAL: ALUMINUM 7050  
 CONDITION: T73651  
 ENVIRONMENT: R. T. , L. H. A.

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		R=+0.08	R=+0.30	R=+0.50	
DELTA K MIN	A:	6.89	.879		
	B:	4.39	291		
	C:	5.01		.613	
	D:				
	5.00		.376		
	6.00		.628	1.34	
	7.00	.909	1.08	2.82	
	8.00	1.27	1.82	5.38	
	9.00	1.83	2.96	9.08	
	10.00	2.61	4.62	13.5	
	13.00	6.62	13.6	23.4	
	16.00	13.0	28.9		
	20.00	26.0			
DELTA K MAX	A:	23.68	45.8		
	B:	18.76	46.0		
	C:	13.34		23.6	
	D:				
ROOT MEAN SQUARE		11.09	18.90	11.72	
PERCENT ERROR					

LIFE	0.0-0.5			
PREDICTION	0.5-0.8			
RATIO	0.8-1.25	1		1
SUMMARY	1.25-2.0		1	
(NP/NA)	>2.0			

CONDITION/HT: T73651  
 FORM: 4.00" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 FREQUENCY: 6.00 HZ  
 ENVIRONMENT: R. T., L. H. A.

YIELD STRENGTH: 65.0 KSI  
 ULT. STRENGTH: 80.0 KSI  
 SPECIMEN THK: 0.992- 0.993"  
 SPECIMEN WIDTH: 6.000"  
 REFERENCES: 85837

ALUM.  
ALLOY

7050

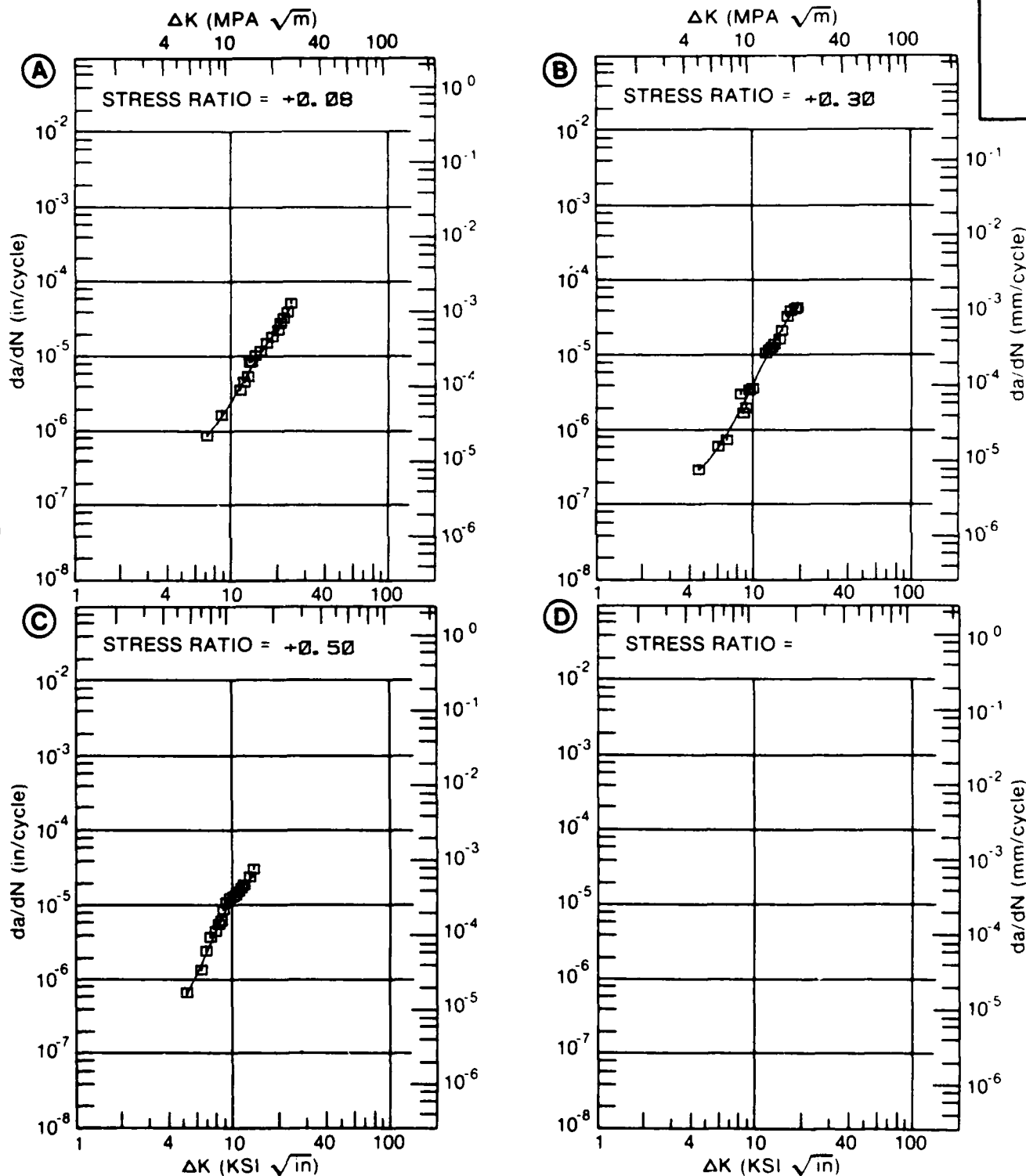


Figure 8.7.3.35

TABLE 8.7.3.36

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.7.3.36 INDICATING EFFECT

OF ENVIRONMENT

MATERIAL: ALUMINUM  
CONDITION: T73651

7050

DELTA K  
(KSI\*IN\*\*1/2)

DA/DN (10\*\*-6 IN./CYCLE)

A

B

C

D

E= R. T.

E= R. T.

L. H. A

S. T. W

6HZ

1HZ

DELTA K	A:	4.75	.20	
MIN	B:	7.08		1.92
	C:			
	D:			
		5.00	.242	
		6.00	.446	
		7.00	.766	
		8.00	1.24	5.07
		9.00	1.92	9.34
		10.00	2.87	13.3
		13.00	8.02	23.9
		16.00	18.6	49.6
DELTA K	A:	18.39	33.2	
MAX	B:	16.70		62.9
	C:			
	D:			

ROOT MEAN SQUARE  
PERCENT ERROR

11.45

15.46

LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25  
SUMMARY 1.25-2.0  
(NP/NA) 2.0

1

1

CONDITION/HT: T73651  
 FORM: 4.00" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: T-L  
 STRESS RATIO: +0.08  
 FREQUENCY:

YIELD STRENGTH: 65.0- 66.0 KSI  
 ULT. STRENGTH: 76.0- 80.0 KSI  
 SPECIMEN THK: 0.990- 0.993"  
 SPECIMEN WIDTH: 6.000"  
 REFERENCES: 85837, 88579

ALUM.  
 ALLOY

7050

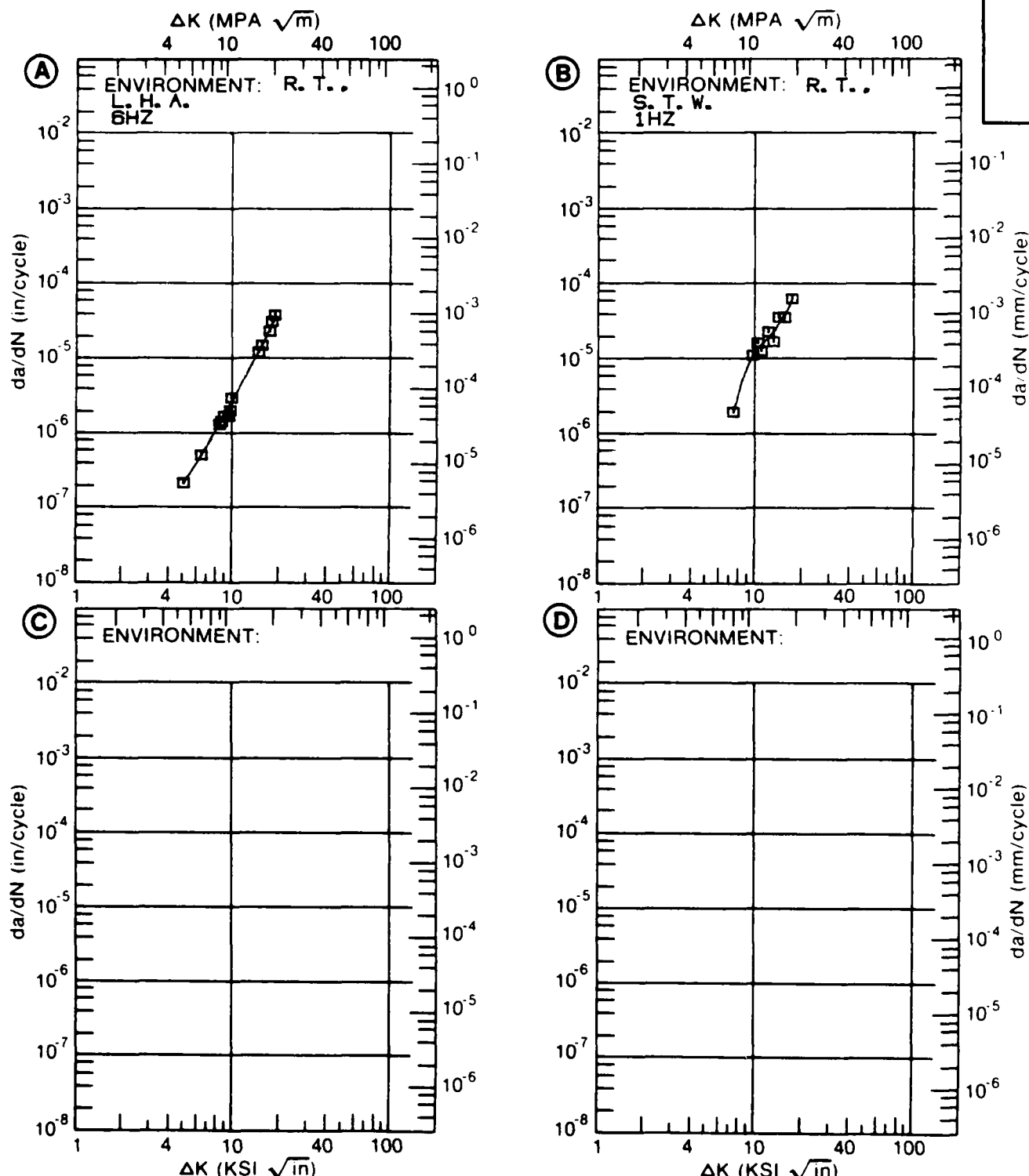


Figure 8.7.3.36

TABLE 8.7.3.37

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.7.3.37 INDICATING EFFECT

## OF ENVIRONMENT

MATERIAL: ALUMINUM		7050			
CONDITION: T73651					
DELTA K (KSI*IN**1/2)		DA/DN (10***-6 IN./CYCLE)			
		A	B	C	D
		E= R. T. L. H. A.	E= R. T. H. H. A.	E= R. T. SALT FOG	
DELTA K MIN	A: 5.79	1.05			
	B: 5.80		1.79		
	C: 8.11			13.9	
	D:				
	6.00	1.14	2.17		
	7.00	2.23	4.43		
	8.00	4.15	7.03		
	9.00	6.67	9.76	14.9	
	10.00	9.39	12.7	20.8	
	13.00	16.2	24.7	31.0	
	16.00	28.5	52.2	54.0	
DELTA K MAX	A: 18.46	59.6			
	B: 17.57		82.1		
	C: 17.24			74.3	
	D:				
ROOT MEAN SQUARE		7.17	5.54	9.79	
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25	1	1	1	
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION/HT: T73651  
 FORM: 6.00" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 STRESS RATIO: +0.33  
 FREQUENCY: 18.30 HZ

YIELD STRENGTH: 60.9 KSI  
 ULT. STRENGTH: 69.7 KSI  
 SPECIMEN THK: 0.998- 1.000"  
 SPECIMEN WIDTH: 3.801- 3.805"  
 REFERENCES: AL013

ALUM.  
ALLOY

7050

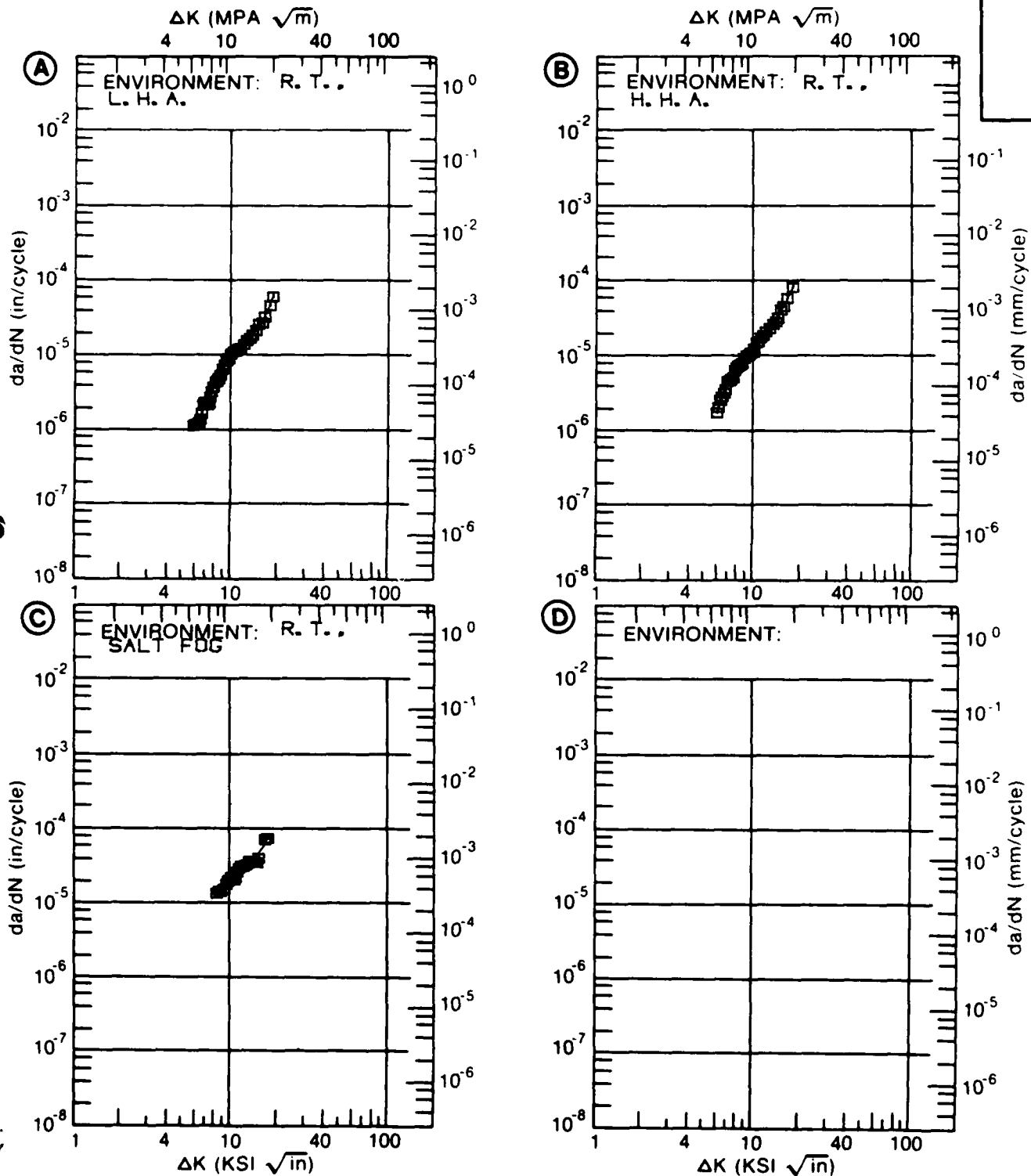


Figure 8.7.3.37

TABLE 8.7.3.38

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.7.3.38 INDICATING EFFECT

OF STRESS RATIO

MATERIAL: ALUMINUM 7050  
CONDITION: T73651  
ENVIRONMENT: R.T., SALT FOG

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		R=+0.03			
DELTA K MIN	A:	8.45	6.11		
	B:				
	C:				
	D:				
	9.00	8.55			
	10.00	13.1			
	13.00	25.3			
	16.00	43.0			
DELTA K MAX	A:	19.57	112.		
	B:				
	C:				
	D:				
ROOT MEAN SQUARE		7.13			
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25	1			
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION/HT: T73651  
 FORM: 6.00" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: T-L  
 FREQUENCY: 18.30 HZ  
 ENVIRONMENT: R. T., SALT FOG

YIELD STRENGTH: 59.1 KSI  
 ULT. STRENGTH: 70.5 KSI  
 SPECIMEN THK: 1.000"  
 SPECIMEN WIDTH: 3.801"  
 REFERENCES: AL013

ALUM.  
 ALLOY

7050

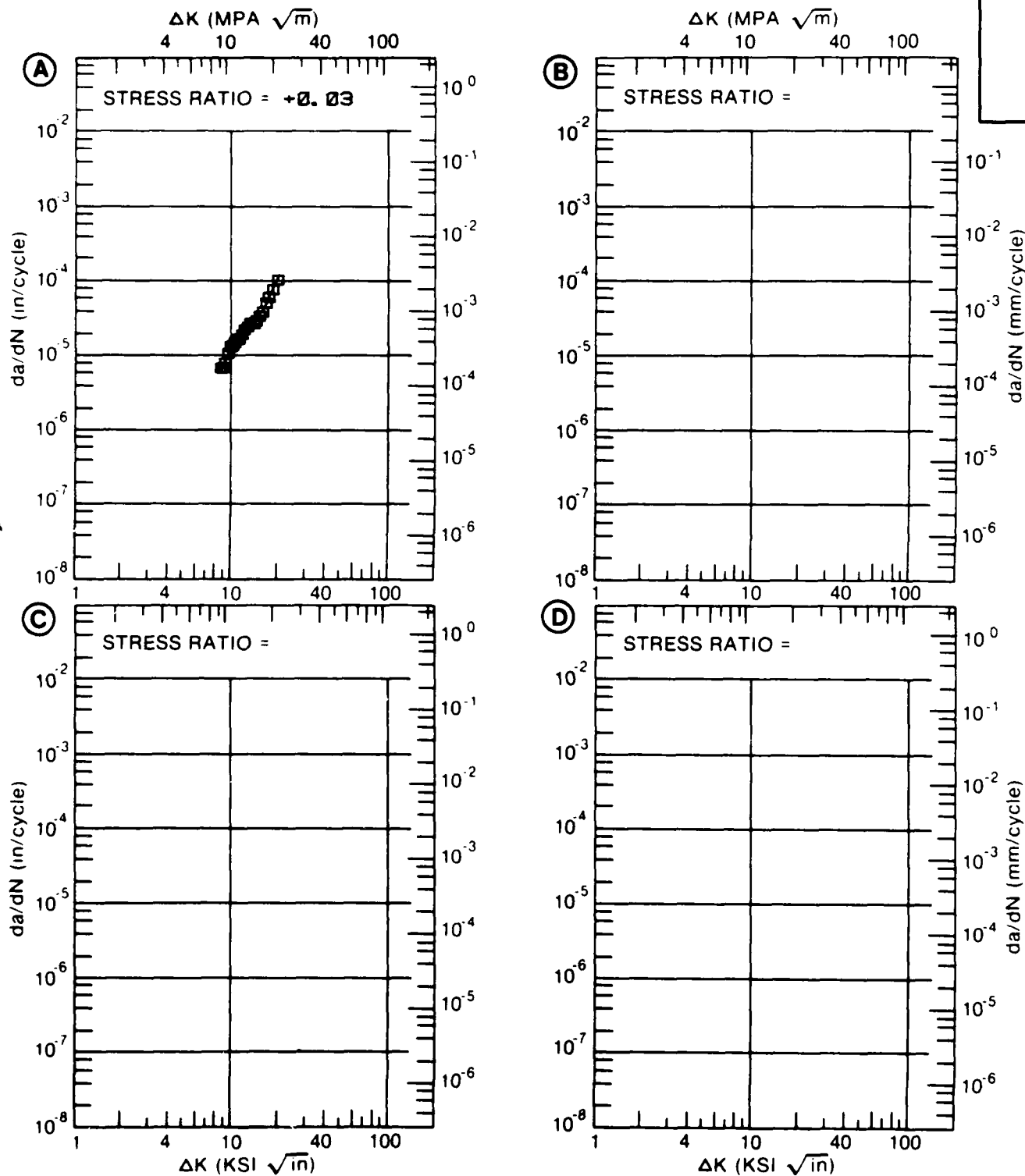


Figure 8.7.3.38



TABLE 8.7.3.39

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTORDATA ASSOCIATED WITH FIGURE 8.7.3.39 INDICATING EFFECT  
OF ENVIRONMENT

MATERIAL: ALUMINUM		7050			
CONDITION: T73651					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R. T. L. H. A.	E= R. T. H. H. A.	E= R. T. SALT FOG	
DELTA K MIN	A:	3.91			
	B:	3.88	510		
	C:	5.91		3.88	
	D:				
	4.00	296	495		
	5.00	520	944		
	6.00	1.06	2.39	4.25	
	7.00	2.04	4.58	8.45	
	8.00	3.38	7.39	12.0	
	9.00	4.87	10.9	15.0	
	10.00	6.75	15.5	18.4	
	13.00	26.8	41.1	44.4	
DELTA K MAX	A:	15.34	106.		
	B:	14.54	112.		
	C:	13.62		57.8	
	D:				
ROOT MEAN SQUARE		19.68	12.17	10.16	
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25	3	2	2	
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION/HT: T73651  
 FORM: 8.00" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: T-L  
 STRESS RATIO: +0.33  
 FREQUENCY: 18.30 HZ

YIELD STRENGTH: 59.1- 82.1 KSI  
 ULT. STRENGTH: 70.5- 73.2 KSI  
 SPECIMEN THK: 0.999- 1.000"  
 SPECIMEN WIDTH: 3.801- 3.805"  
 REFERENCES: AL013

ALUM.  
 ALLOY

7050

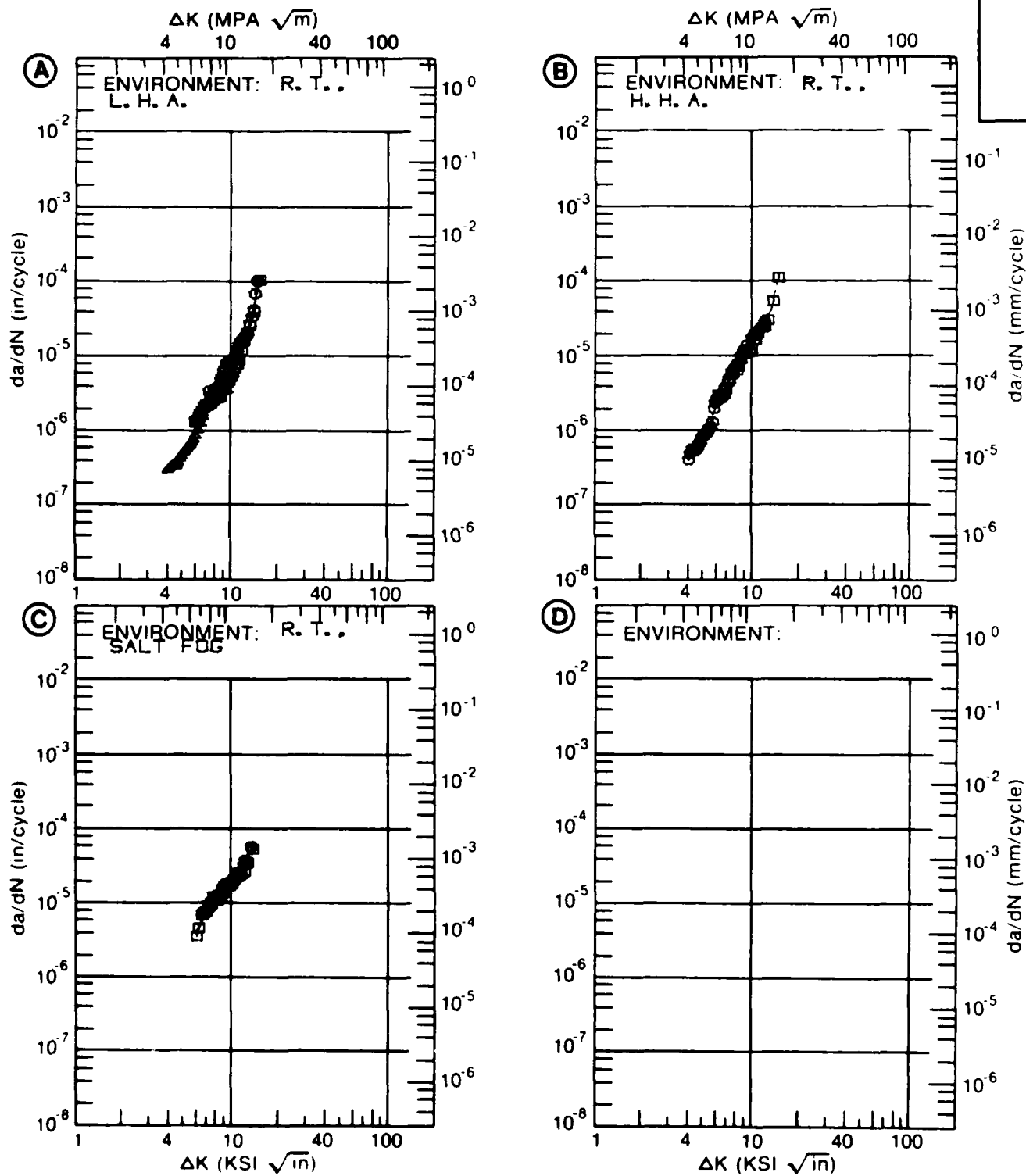


Figure 8.7.3.39

TABLE 8.7.3.40

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.7.3.40 INDICATING EFFECT

OF ENVIRONMENT

MATERIAL: ALUMINUM		7050			
CONDITION: T73651					
DELTA K (KSI*IN**1/2)		DA/DN (10**--6 IN./CYCLE)			
		A	B	C	D
		E= R. T. L. H. A.	E= R. T. H. H. A.	E= R. T. SALT FOG	
DELTA K MIN	A: 5.82	1.46			
	B: 5.86		2.69		
	C: 5.89			6.56	
	D:				
	6.00	1.57	2.60	6.65	
	7.00	2.15	4.43	8.01	
	8.00	2.79	7.59	10.3	
	9.00	3.72	11.0	13.7	
	10.00	5.27	14.9	18.5	
	13.00	23.6	38.3	46.0	
DELTA K MAX	A: 15.19	105.			
	B: 14.64		74.1		
	C: 13.28			49.9	
	D:				
ROOT MEAN SQUARE		13.56	9.03	9.23	
PERCENT ERROR					
LIFE PREDICTION RATIO SUMMARY (NP/NA)	0.0-0.9 0.5-0.8 0.8-1.25 1.25-2.0 >2.0	1	1	1	

CONDITION/HT: T73651  
 FORM: 6.00" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: S-L  
 STRESS RATIO: +0.33  
 FREQUENCY: 18.30 HZ

YIELD STRENGTH: 56.8 KSI  
 ULT. STRENGTH: 67.7 KSI  
 SPECIMEN THK: 0.998- 1.000"  
 SPECIMEN WIDTH: 3.805"  
 REFERENCES: AL013

ALUM.  
 ALLOY

7050

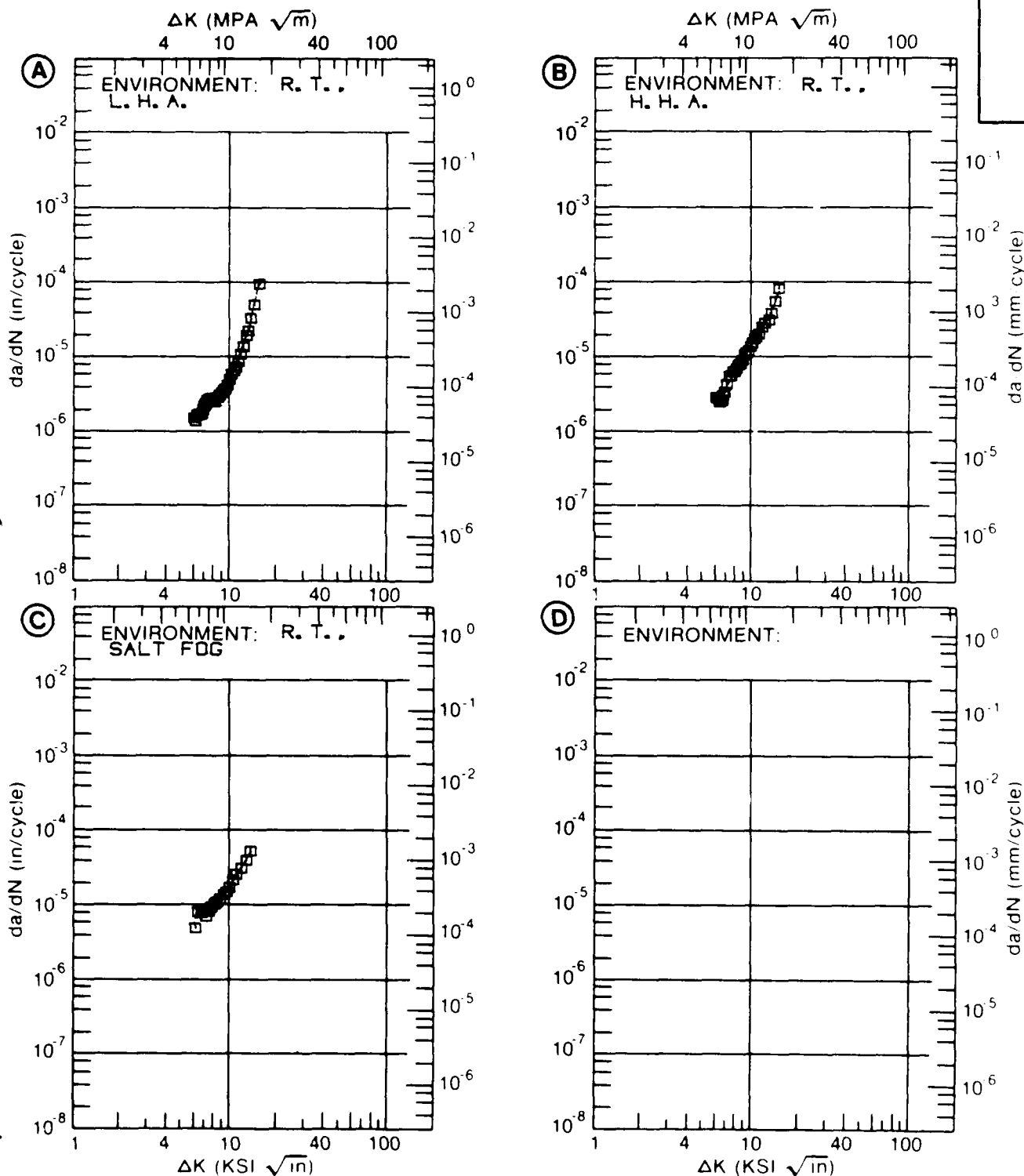


Figure 8.7.3.40

TABLE 8.7.3.41

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.7.3.41 INDICATING EFFECT

OF ENVIRONMENT

MATERIAL: ALUMINUM  
CONDITION: T73651

7050

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R. T. H. H. A. 2HZ	E= R. T. 3. 5% NACL 20HZ		
DELTA K MIN	A:	2.88	.053		
	B:	7.42		2.36	
	C:				
	D:				
	3.00	.0607			
	3.50	.0983			
	4.00	.152			
	5.00	.330			
	6.00	.662			
	7.00	1.25			
	8.00	2.23	3.17		
	9.00	3.72	4.90		
	10.00	5.81	7.01		
	13.00	15.6	15.5		
	16.00	28.6	26.9		
	20.00	49.0	46.4		
	25.00	82.6			
	30.00	135.			
	35.00	223.			
	40.00	380.			
DELTA K MAX	A:	45.76	726.		
	B:	20.84		51.1	
	C:				
	D:				

ROOT MEAN SQUARE  
PERCENT ERROR

22.51

8.95

LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25  
SUMMARY 1.25-2.0  
(NP/NA) >2.0

1

1

CONDITION/HT: T73651  
 FORM: 0.44- 1.00" TH EXTRUSION  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 STRESS RATIO: +0.10  
 FREQUENCY:

YIELD STRENGTH:  
 ULT. STRENGTH:  
 SPECIMEN THK: 0.151"  
 SPECIMEN WIDTH: 3.000"  
 REFERENCES: 86844

ALUM.  
 ALLOY

7050

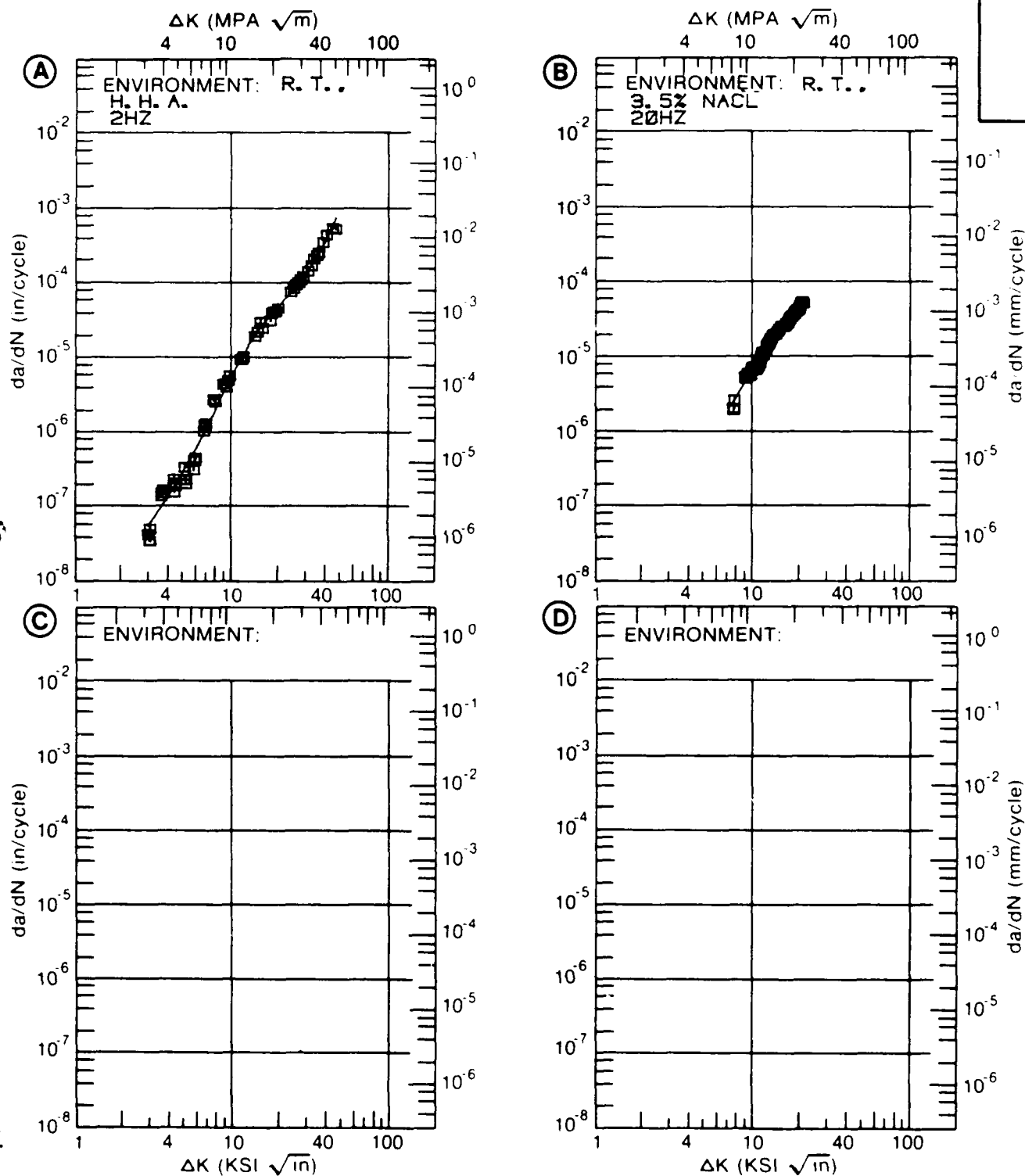


Figure 8.7.3.41

TABLE 8.7.3.42

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.7.3.42 INDICATING EFFECT  
OF ENVIRONMENT

MATERIAL: ALUMINUM		7050			
CONDITION: T73652					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R. T. DRY AIR	E= R. T. H. H. A.	E= R. T. SALT FOG	
DELTA K MIN	A:	6.37	.740		
	B:	6.31	.843		
	C:	6.17		10.1	
	D:				
		7.00	1.10	2.50	11.1
		8.00	2.24	6.54	18.0
		9.00	4.57	11.4	26.4
	10.00	8.91	16.3	31.4	
	13.00	40.5	36.7	49.5	
	16.00	85.7	88.8	107.	
DELTA K MAX	A:	17.47	96.6		
	B:	16.93	117.		
	C:	16.36		122.	
	D:				
ROOT MEAN SQUARE		15.98	10.58	21.77	
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25				
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION/HT: T73652  
 FORM: 2.50" TH FORGING  
 SPECIMEN TYPE: CT  
 ORIENTATION: T-L  
 STRESS RATIO: +0.33  
 FREQUENCY: 18.30 HZ

YIELD STRENGTH: 63.5 KSI  
 ULT. STRENGTH: 75.5 KSI  
 SPECIMEN THK: 1.000"  
 SPECIMEN WIDTH: 3.805"  
 REFERENCES: AL015

ALUM.  
 ALLOY

7050

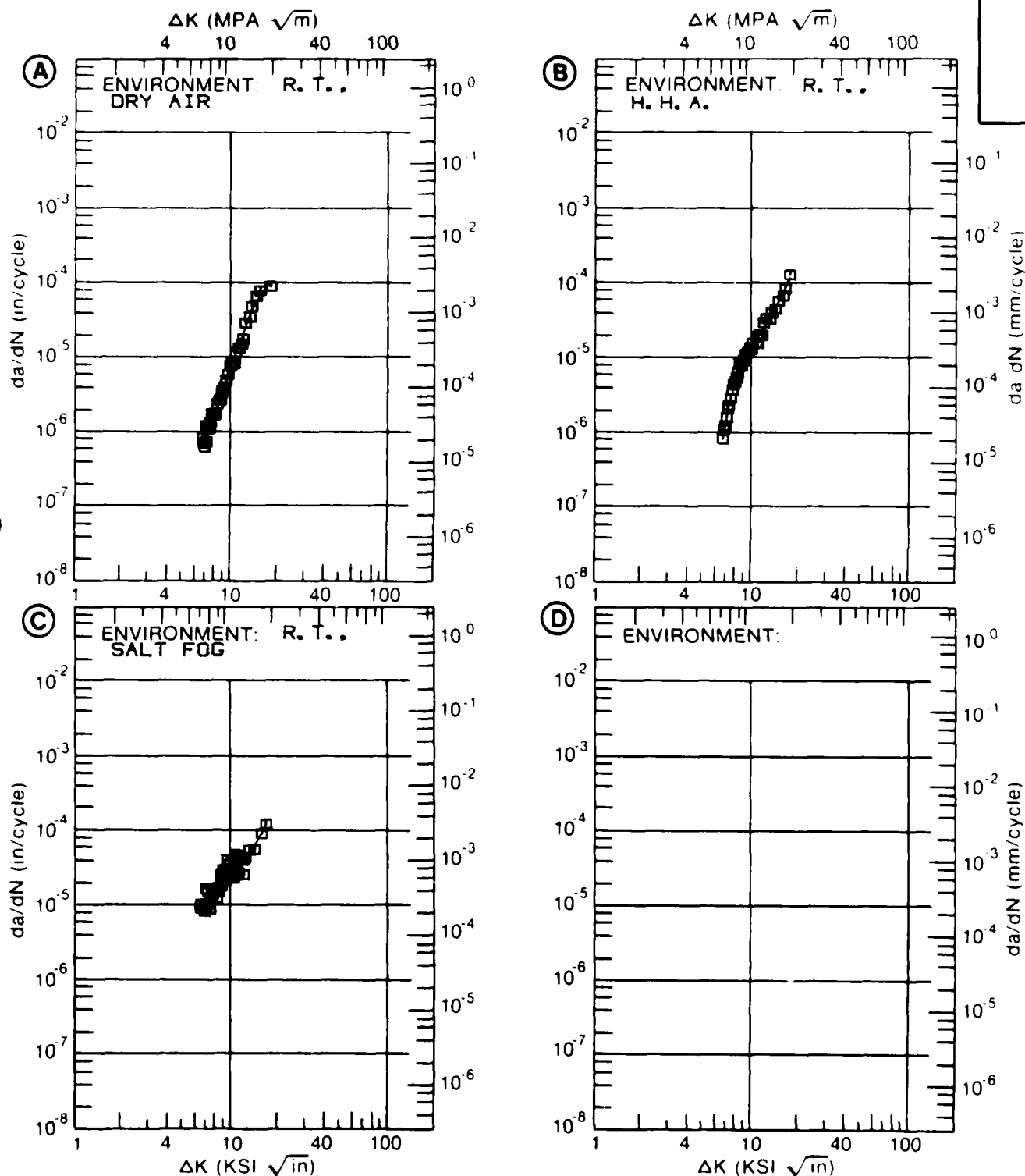


Figure 8.7.3.42



TABLE 8.7.3.43

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTORDATA ASSOCIATED WITH FIGURE 8.7.3.43 INDICATING EFFECT  
OF ENVIRONMENTMATERIAL: ALUMINUM 7050  
CONDITION: T73652

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		E= R. T. DRY AIR	E= R. T. H. H. A.	E= R. T. SALT FOG	
DELTA K MIN	A:	6.44	1.29		
	B:	6.96	5.74		
	C:	6.41		2.88	
	D:				
		7.00	2.38	5.99	7.40
		8.00	3.96	18.7	16.2
		9.00	11.2	36.7	42.6
DELTA K MAX	A:	9.85	71.6		
	B:	9.64	133.		
	C:	9.89		211.	
	D:				
ROOT MEAN SQUARE		18.75	17.95	27.84	
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25				
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION/HT: T73652  
 FORM: 7.50" TH FORGING  
 SPECIMEN TYPE: CT  
 ORIENTATION: S-L  
 STRESS RATIO: +0.33  
 FREQUENCY: 18.30 HZ

YIELD STRENGTH: 58.1 KSI  
 ULT. STRENGTH: 71.0 KSI  
 SPECIMEN THK: 1.000"  
 SPECIMEN WIDTH: 3.805"  
 REFERENCES: AL015

ALUM.  
 ALLOY

7050

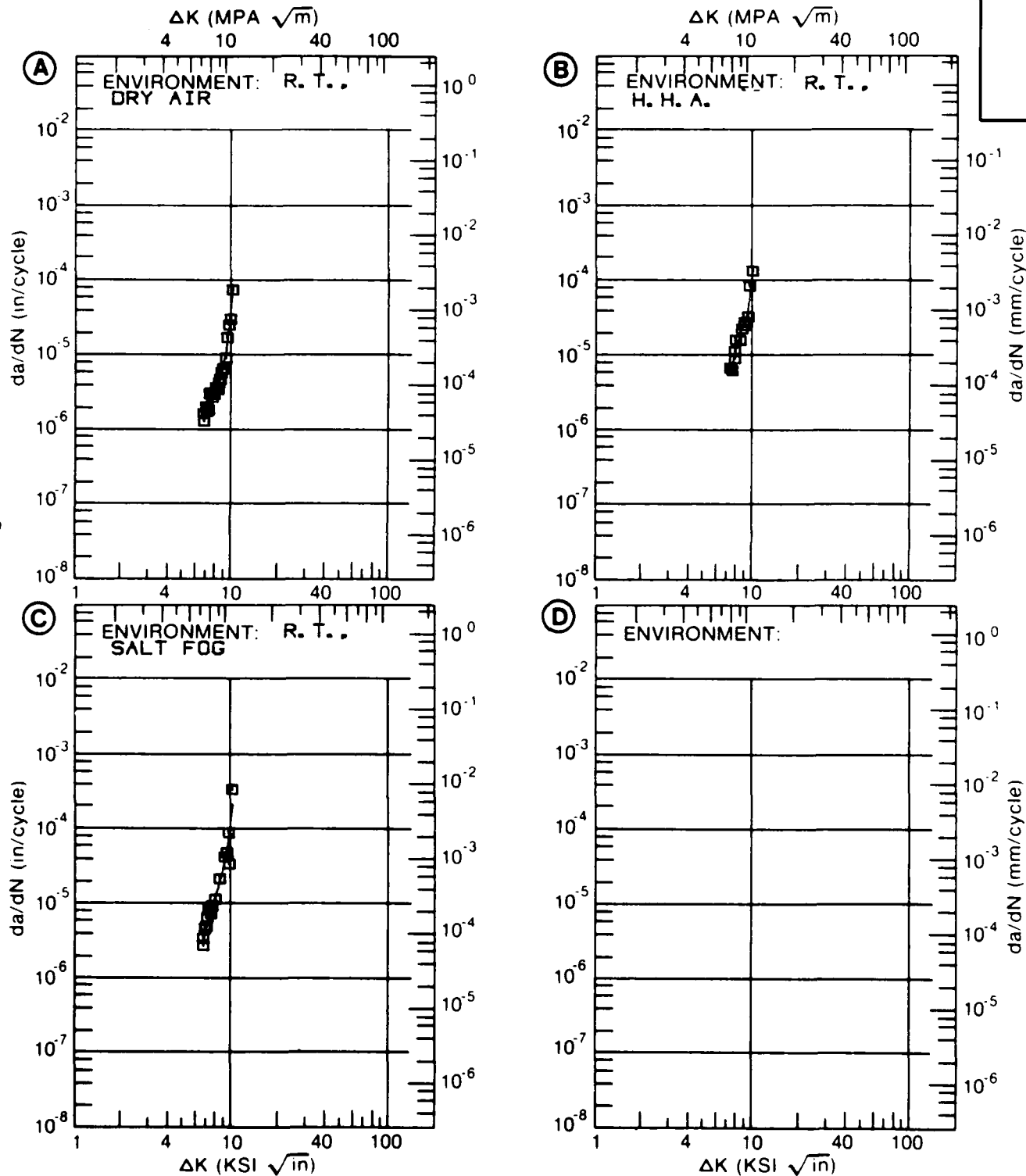


Figure 8.7.3.43

TABLE 8.7.3.44

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.7.3.44 INDICATING EFFECT

## OF ENVIRONMENT

MATERIAL: ALUMINUM 7050  
CONDITION: T76

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		E= R. T. DRY AIR	E= R. T. H. H. A.	E= R. T. SALT FOG	
DELTA K	A: 4.84	.857			
MIN	B: 5.01		2.69		
	C: 5.03			3.85	
	D:				
	5.00	.995			
	6.00	2.03	4.50	6.84	
	7.00	3.24	6.62	10.0	
	8.00	4.52	9.35	13.3	
	9.00	5.82	13.0	17.4	
	10.00	7.26	17.6	23.2	
	13.00	18.8	37.4	71.7	
	16.00	86.5	81.2	205.	
DELTA K	A: 16.03	88.0			
MAX	B: 16.84		122.		
	C: 16.00			205.	
	D:				

ROOT MEAN SQUARE	12.34	10.94	17.45
PERCENT ERROR			

LIFE	0.0-0.5
PREDICTION	0.5-0.8
RATIO	0.8-1.25
SUMMARY	1.25-2.0
(NP/NA)	>2.0

CONDITION/HT: T76  
 FORM: 0.04" TH SHEET  
 SPECIMEN TYPE: CCP  
 ORIENTATION: T-L  
 STRESS RATIO: +0.33  
 FREQUENCY: 13.30 HZ

YIELD STRENGTH: 73.1 KSI  
 ULT. STRENGTH: 91.0 KSI  
 SPECIMEN THK: 0.040"  
 SPECIMEN WIDTH: 4.000"  
 REFERENCES: AL015

ALUM.  
 ALLOY

7050

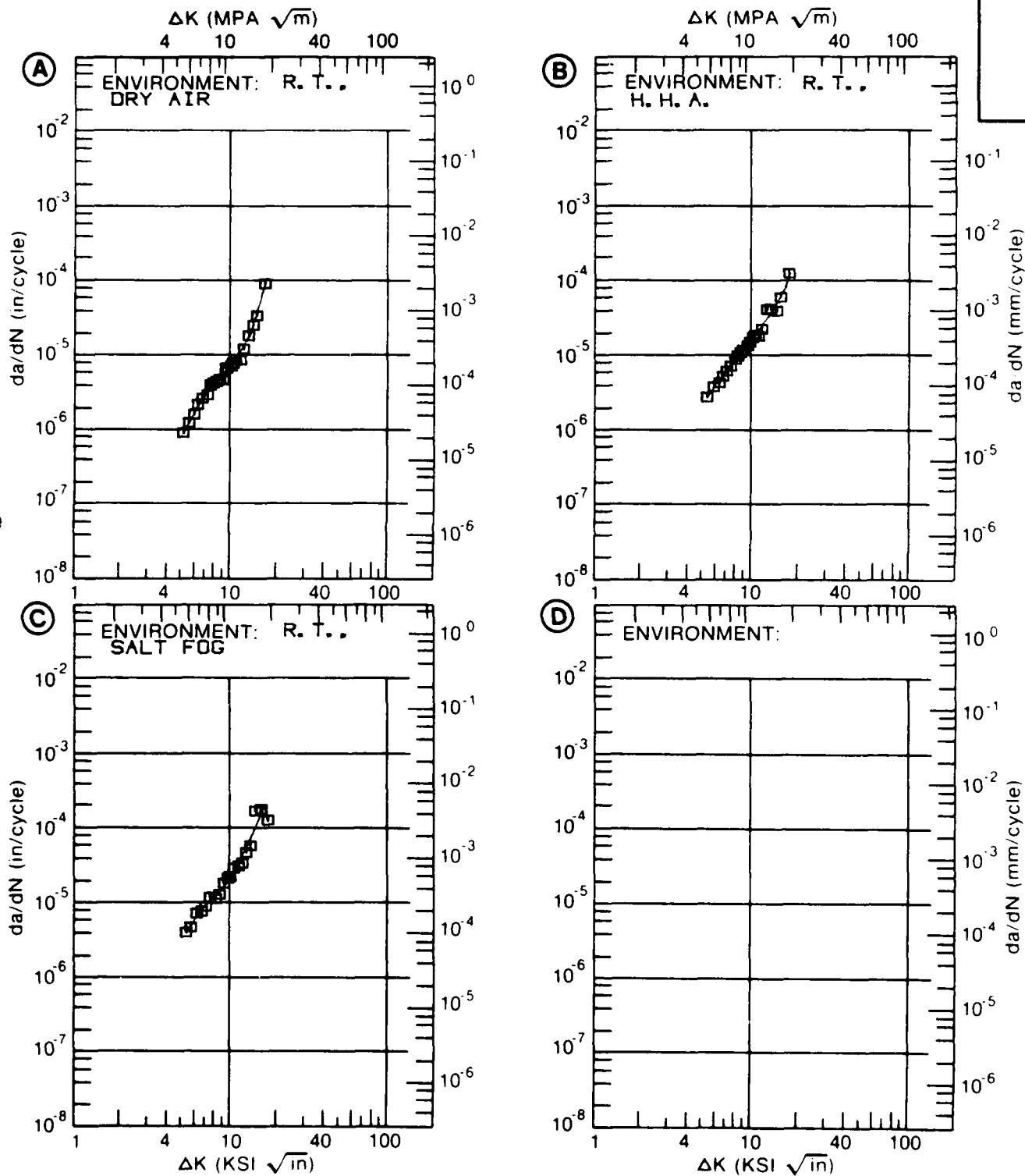


Figure 8.7.3.44

TABLE 8.7.3.45

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.7.3.45 INDICATING EFFECT

OF STRESS RATIO

MATERIAL: ALUMINUM 7050  
CONDITION: T/6  
ENVIRONMENT: R T , LAB AIR

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		R=+0.00	R=+0.33		
DELTA K MIN	A:	8.71	5.35		
	B:	5.75	2.58		
	C:				
	D:				
		6.00	2.88		
		7.00	4.27		
		8.00	5.96		
		9.00	7.99		
		10.00	10.4		
		13.00	14.4		
		16.00	20.4		
		20.00	23.5		
		25.00	36.1		
DELTA K MAX	A:	40.58	272.		
	B:	30.93	327.		
	C:				
	D:				
		40.00	40.1		
			70.3		
			148.		
			290.		
ROOT MEAN SQUARE		5.60	9.29		
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25	2	4		
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION/HT: T76  
 FORM: 0.09" TH SHEET  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T  
 FREQUENCY: 13.30 HZ  
 ENVIRONMENT: R.T., LAB AIR

YIELD STRENGTH: 79.0 KSI  
 ULT. STRENGTH: 85.8 KSI  
 SPECIMEN THK: 0.090- 0.091"  
 SPECIMEN WIDTH: 4.000- 4.004"  
 REFERENCES: 86213

ALUM.  
ALLOY

7050

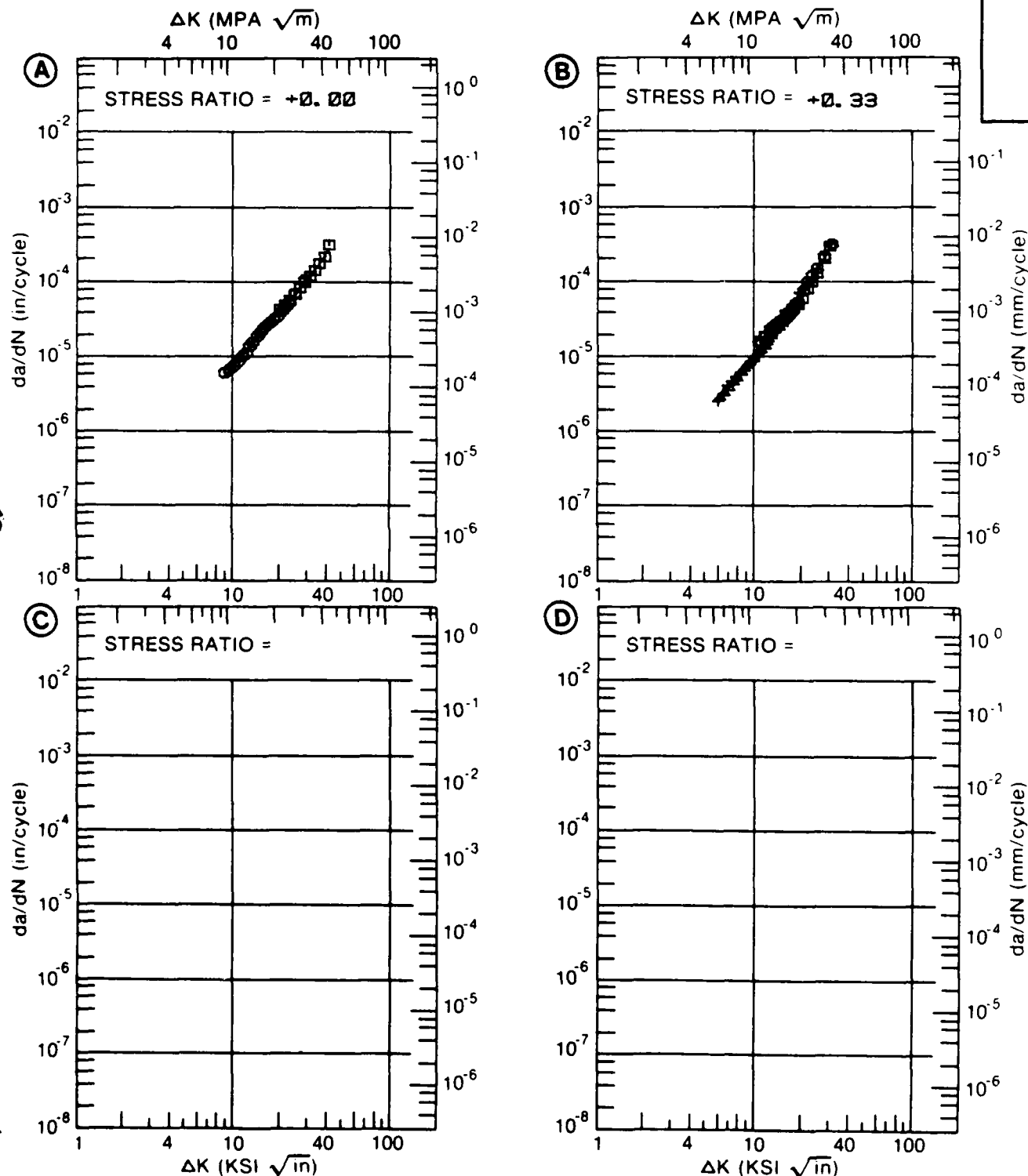


Figure 8.7.3.45

TABLE 8.7.3.46

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.7.3.46 INDICATING EFFECT

## OF ENVIRONMENT

MATERIAL: ALUMINUM 7050  
CONDITION: T76

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R. T. DRY AIR	E= R. T. H. H. A.	E= R. T. SALT FOG	
DELTA K	A: 5.13	1.36			
MIN	B: 5.17		3.52		
	C: 5.14			3.98	
	D:				
	6.00	2.91	5.56	7.49	
	7.00	4.97	8.84	12.6	
	8.00	7.72	13.2	18.7	
	9.00	10.9	19.0	25.5	
	10.00	14.0	26.7	33.3	
	13.00	24.6	66.2	65.3	
	16.00		151.	121.	
DELTA K	A: 15.70	88.1			
MAX	B: 17.18		206.		
	C: 17.27			158.	
	D:				
ROOT MEAN SQUARE		13.89	12.44	8.81	
PERCENT ERROR					

LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25  
SUMMARY 1.25-2.0  
(NP/NA) >2.0

CONDITION/HT: T76  
 FORM: Ø. 13" TH SHEET  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T  
 STRESS RATIO: +0.33  
 FREQUENCY: 13.30 HZ

YIELD STRENGTH: 79.6 KSI  
 ULT. STRENGTH: 83.6 KSI  
 SPECIMEN THK: Ø. 125"  
 SPECIMEN WIDTH: 4.000"  
 REFERENCES: ALØ15

ALUM.  
 ALLOY

7050

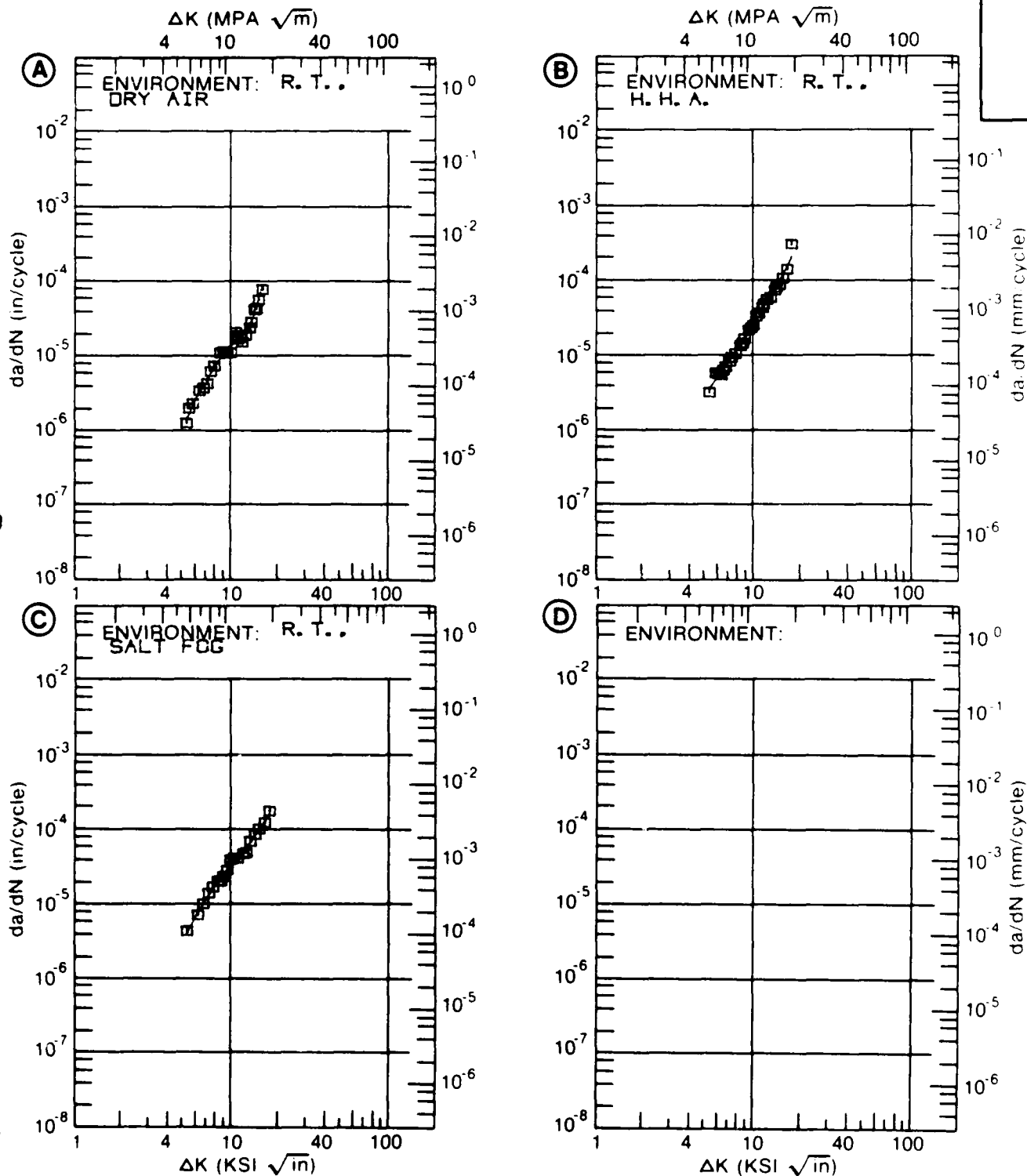


Figure 8.7.3.46



TABLE 8.7.3.47

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.7.3.47 INDICATING EFFECT

OF ENVIRONMENT

MATERIAL: ALUMINUM 7050  
CONDITION: T7651

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R. T. H. H. A., 2HZ	E= R. T. H. H. A., 20HZ	E= R. T. 3. 5% NACL, 2HZ	E= R. T. 3. 5% NACL, 20HZ
DELTA K MIN	A: 5.39	.674			
	B: 3.50		.131		
	C: 8.21			13.8	
	D: 3.50				.0943
	4.00		.183		.279
	5.00		.330		1.26
	6.00	1.39	.700		3.35
	7.00	2.75	1.73		6.64
	8.00	4.05	3.74		11.0
	9.00	5.43	6.50	17.4	16.1
	10.00	7.27	9.75	23.0	21.8
	13.00	17.0	21.3	46.5	41.2
	16.00	35.0	35.5	80.4	63.8
	20.00	70.8	52.1	141.	102.
	25.00	146.		247.	172.
	30.00	292.		399.	288.
	35.00	603.		628.	
	40.00	1297.		1018.	
	50.00			4127.	
DELTA K MAX	A: 47.21	4197.			
	B: 21.86		55.9		
	C: 53.64			11027.	
	D: 31.41				334.
ROOT MEAN SQUARE		8.88	10.99	10.29	12.41
PERCENT ERROR					

LIFE 0.0-0.3  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25  
SUMMARY 1.25-2.0  
(NP/NA) >2.0

1

1

1

1

CONDITION/HT: T7651  
 FORM: Ø. 52" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 STRESS RATIO: +Ø. 1Ø  
 FREQUENCY:

YIELD STRENGTH:  
 ULT. STRENGTH:  
 SPECIMEN THK: Ø. 147- Ø. 148"  
 SPECIMEN WIDTH: 3. ØØØ"  
 REFERENCES: 86844

ALUM.  
 ALLOY

7050

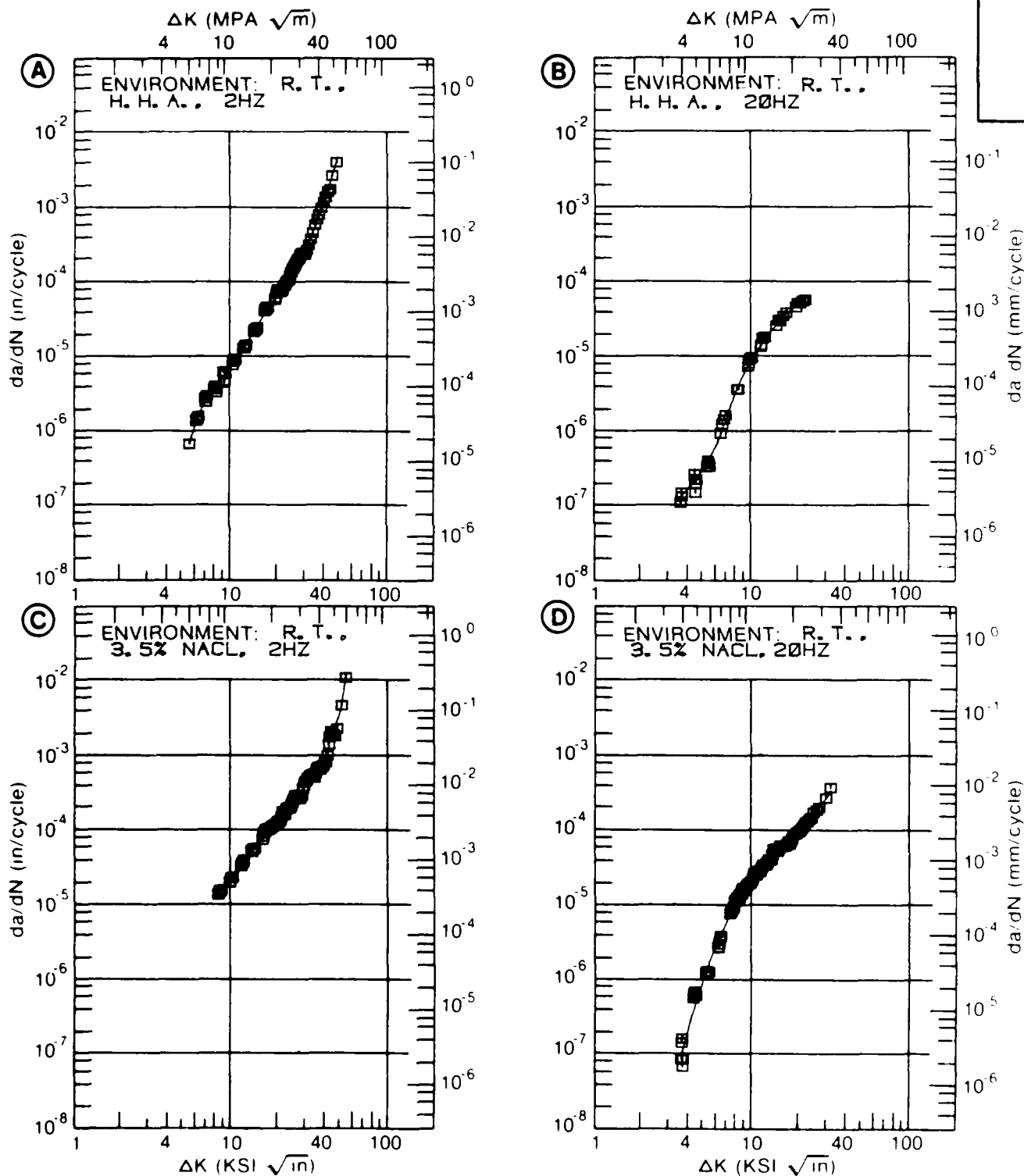


Figure 8.7.3.47

TABLE 8.7.3.48

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.7.3.48 INDICATING EFFECT

OF ENVIRONMENT

MATERIAL: ALUMINUM		7050			
CONDITION: T7651					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		E= R. T.			
		3. 5% NaCl			
DELTA K	A: 5. 35	. 977			
MIN	B:				
	C:				
	D:				
	6. 00	2. 51			
	7. 00	6. 46			
	8. 00	11. 6			
	9. 00	17. 2			
	10. 00	22. 9			
	13. 00	44. 1			
	16. 00	88. 5			
DELTA K	A: 16. 69	106.			
MAX	B:				
	C:				
	D:				
ROOT MEAN SQUARE		11. 47			
PERCENT ERROR					
LIFE	0. 0-0. 5				
PREDICTION	0. 5-0. 8				
RATIO	0. 8-1. 25				
SUMMARY	1. 25-2. 0				
(NP/NA)	>2. 0				

CONDITION/HT: T7651  
 FORM: 1.13" TH PLATE  
 SPECIMEN TYPE:  
 ORIENTATION:  
 STRESS RATIO: +0.10  
 FREQUENCY: 1.00 HZ

YIELD STRENGTH:  
 ULT. STRENGTH:  
 SPECIMEN THK:  
 SPECIMEN WIDTH:  
 REFERENCES: 91332

ALUM.  
 ALLOY

7050

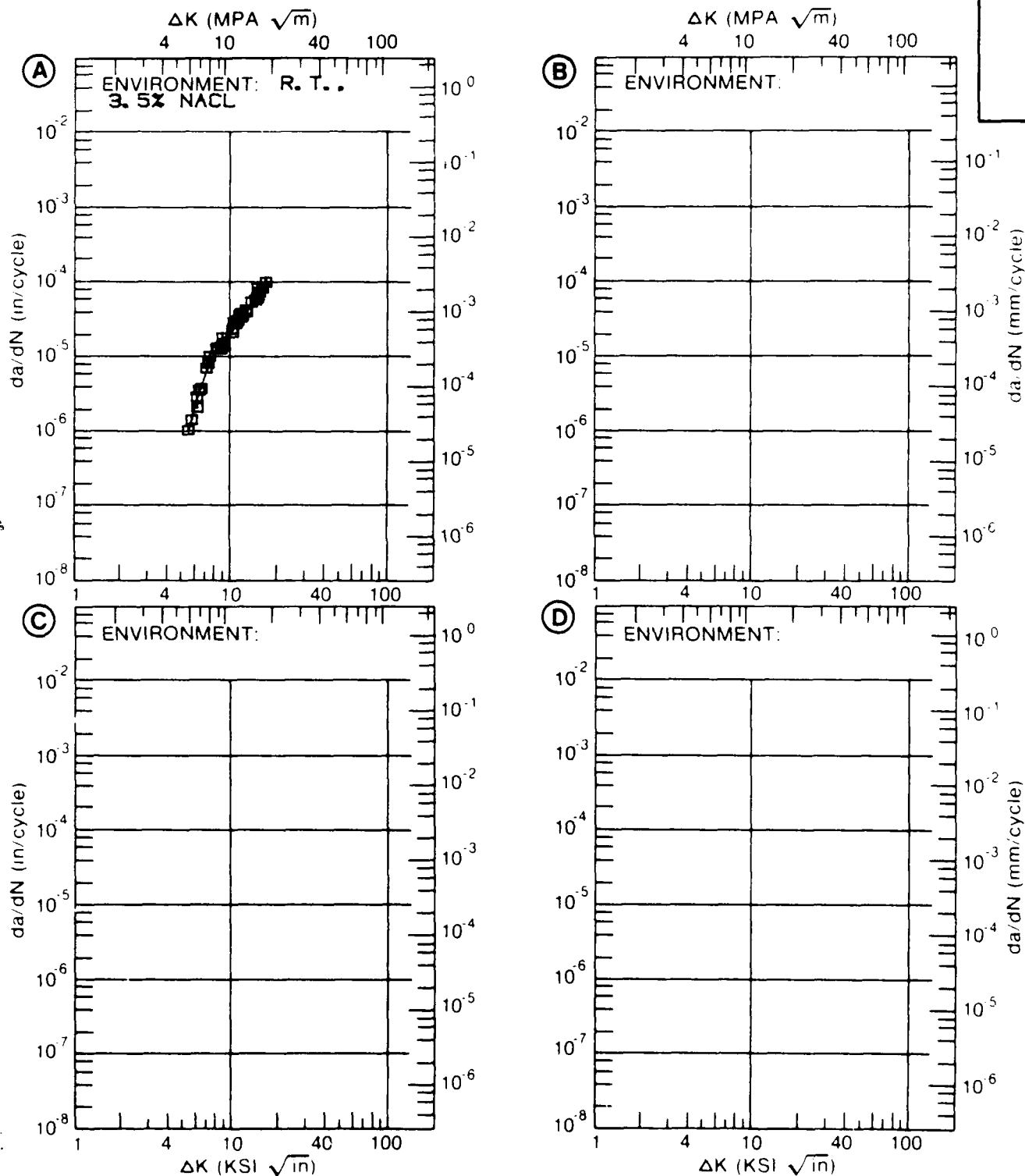


Figure 8.7.3.48

TABLE 8.7.3.49

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE

INDICATING EFFECT

OF ENVIRONMENT

MATERIAL ALUMINUM 7050  
CONDITION: T7651

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R. I. DRY AIR			
DELTA K MIN	A:	6.45	2.45		
	B:				
	C:				
	D:				
		7.00	3.63		
		8.00	5.78		
		9.00	7.70		
		10.00	9.43		
		13.00	15.6		
		16.00	23.9		
		20.00	41.0		
	A:	24.59	98.5		
	B:				
DELTA K MAX	C:				
	D:				

ROOT MEAN SQUARE 6.62  
PERCENT ERROR

LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25  
SUMMARY 1.25-2.0  
(NP/NA) >2.0

CONDITION/HT: T7651  
 FORM: 1.13" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 STRESS RATIO: +0.10  
 FREQUENCY: 20.00 HZ

YIELD STRENGTH:  
 ULT. STRENGTH:  
 SPECIMEN THK:  
 SPECIMEN WIDTH:  
 REFERENCES: 91332

ALUM.  
 ALLOY

7050

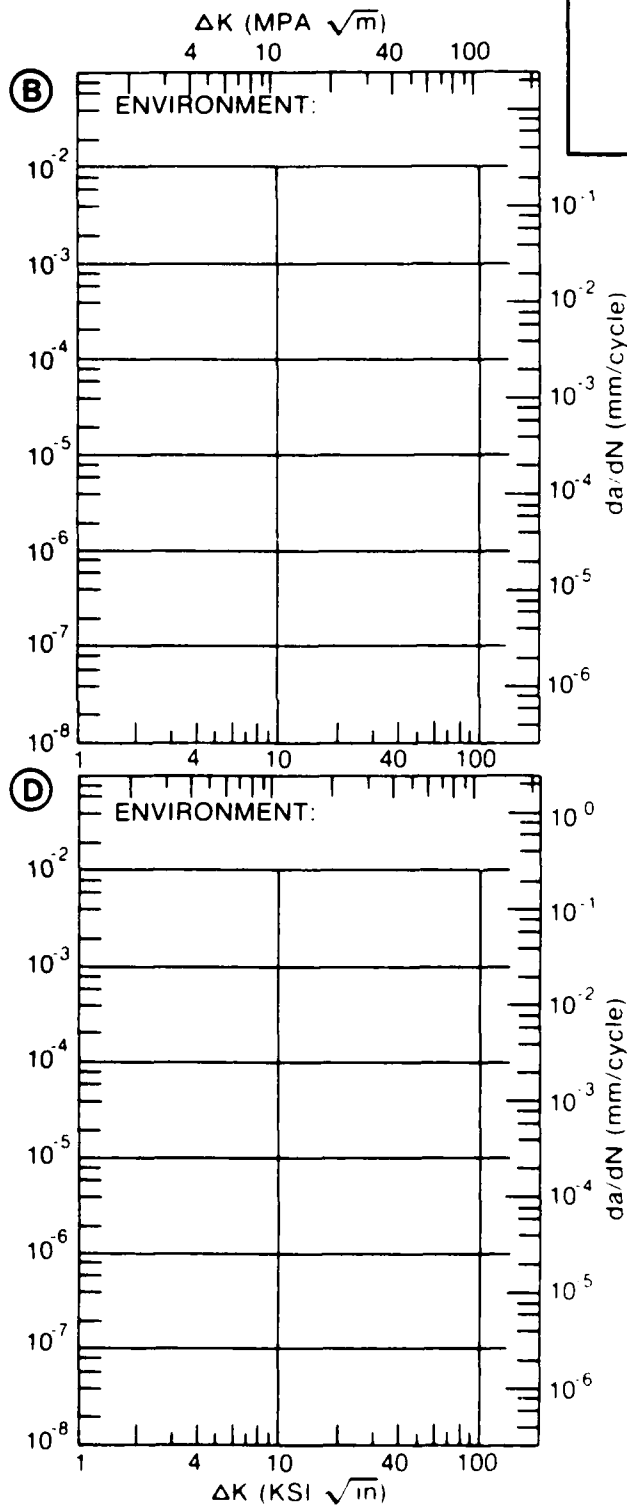
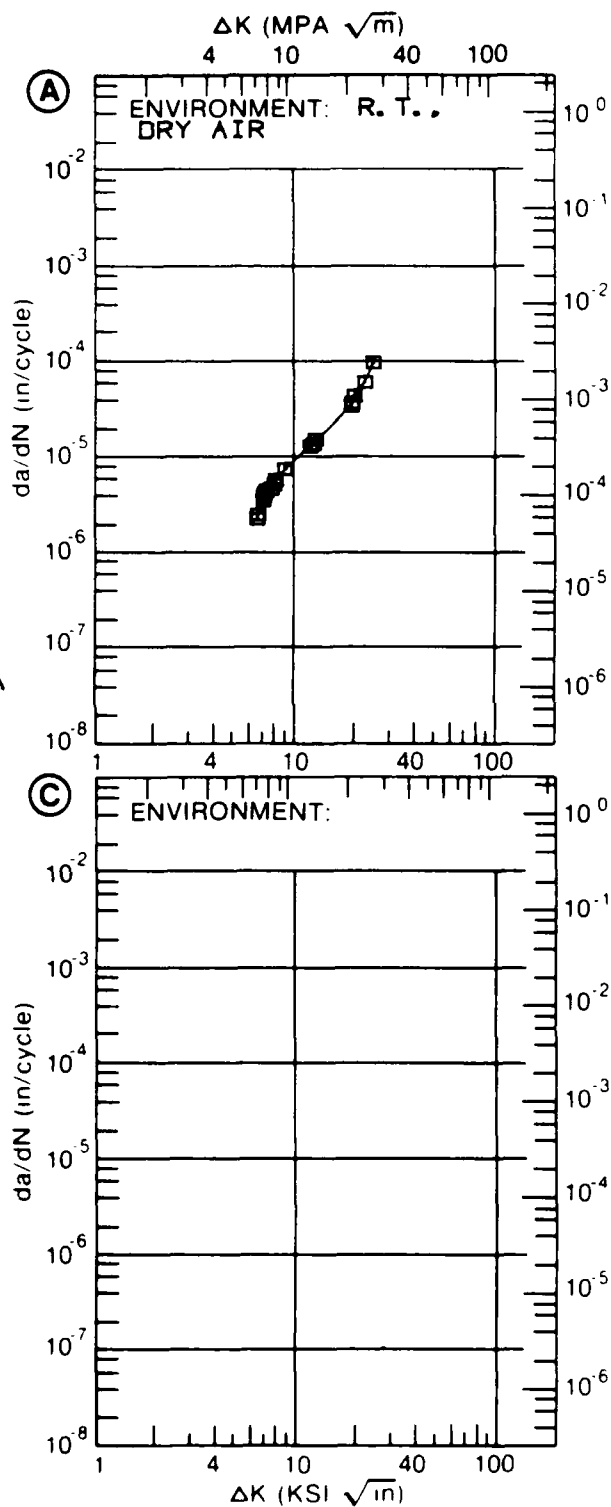


Figure 8.7.3.4

TABLE 8.7.3.50

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.7.3.50 INDICATING EFFECT

## OF ENVIRONMENT

MATERIAL: ALUMINUM		7050			
CONDITION: T7651					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R. T. LAB AIR	E= R. T. SIM SEA WATER	E= R. T. JP-4 FUEL	
DELTA K	A: 4.08	.107			
MIN	B: 5.62		.807		
	C: 5.00			.514	
	D:				
	5.00	.580			
	6.00	1.55	.980	.920	
	7.00	2.92	1.77	1.08	
	8.00	4.57	3.31	1.41	
	9.00	6.33	6.06	2.23	
	10.00	8.04	10.6	3.61	
	13.00	12.0	27.6	9.18	
	16.00	14.6	35.8	16.4	
	20.00	22.9	64.2	34.1	
	25.00	74.6	446.	105.	
DELTA K	A: 26.13	107.			
MAX	B: 26.23		906.		
	C: 25.28			112.	
	D:				
ROOT MEAN SQUARE		21.58	24.09	13.59	
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25				
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION/HT: T7651  
 FORM: 1.25" TH PLATE  
 SPECIMEN TYPE: WOL  
 ORIENTATION: L-T  
 STRESS RATIO: +0.02  
 FREQUENCY: 1.00- 20.00 HZ

YIELD STRENGTH: 73.8 KSI  
 ULT. STRENGTH: 81.0 KSI  
 SPECIMEN THK: 1.250"  
 SPECIMEN WIDTH: 5.000"  
 REFERENCES: MA005

ALUM.  
 ALLOY

7050

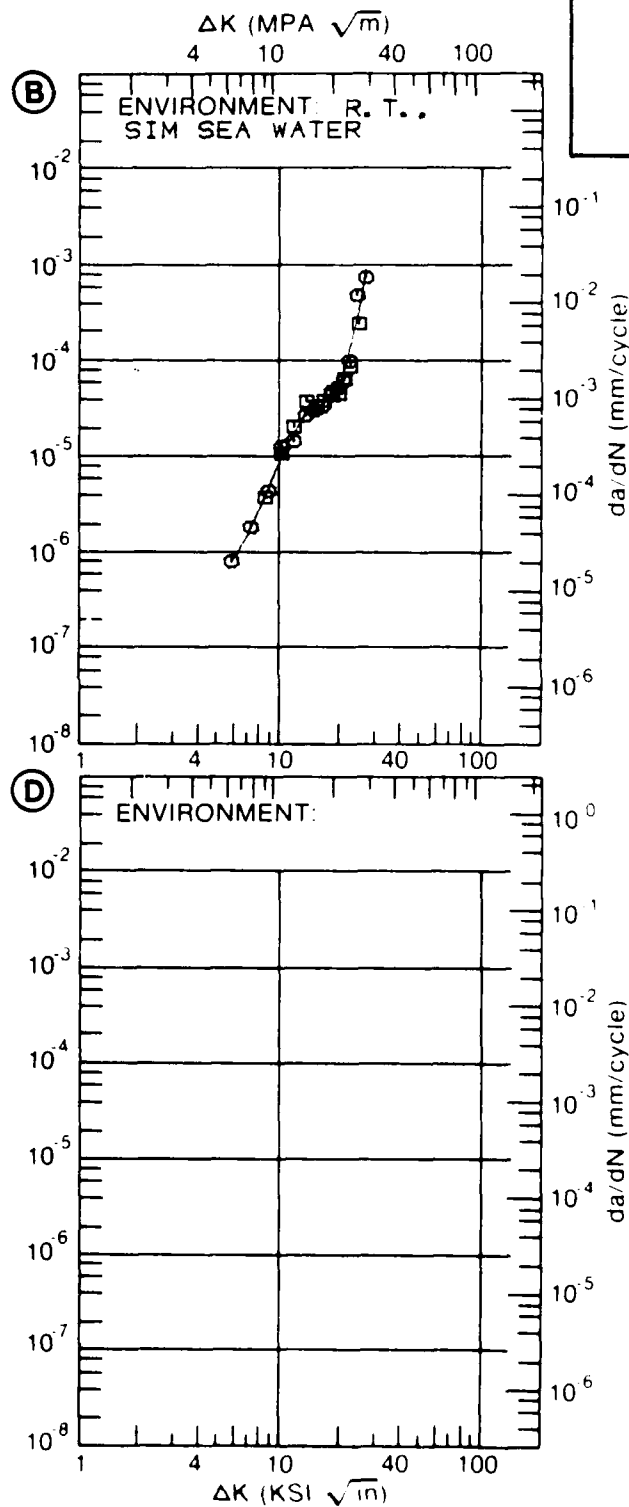
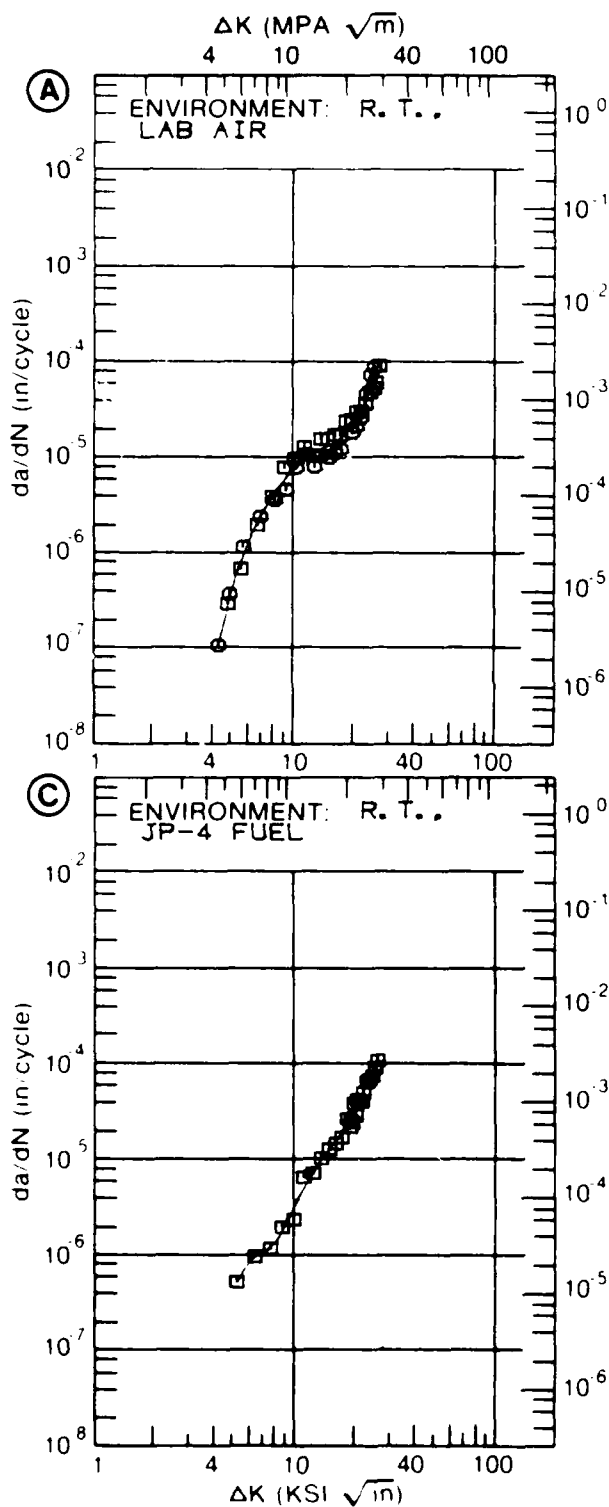


Figure 8.7.3.5a



TABLE 8.7.3.51

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTORDATA ASSOCIATED WITH FIGURE 8.7.3.51 INDICATING EFFECT  
OF ENVIRONMENT

MATERIAL: ALUMINUM		7050			
CONDITION: T7651X					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		E= R. T. L. H. A.	E= R. T. H. H. A.		
DELTA K	A: 4.11	.389			
MIN	B: 4.21		.827		
	C:				
	D:				
	5.00	.505	1.68		
	6.00	.701	3.32		
	7.00	.986	5.65		
	8.00	1.44	8.66		
	9.00	2.22	12.3		
	10.00	3.49	16.6		
	13.00	10.2	32.3		
	16.00	20.9			
DELTA K	A: 18.19	33.7			
MAX	B: 15.62		49.0		
	C:				
	D:				
ROOT MEAN SQUARE		12.45	4.55		
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25	2	1		
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION/HT: T7651X  
 FORM: 0.91" TH EXTRUSION  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 STRESS RATIO: +0.33  
 FREQUENCY: 20.00 HZ

YIELD STRENGTH:  
 ULT. STRENGTH:  
 SPECIMEN THK: 0.900"  
 SPECIMEN WIDTH: 3.100- 3.805"  
 REFERENCES: AL008

ALUM.  
 ALLOY

7050

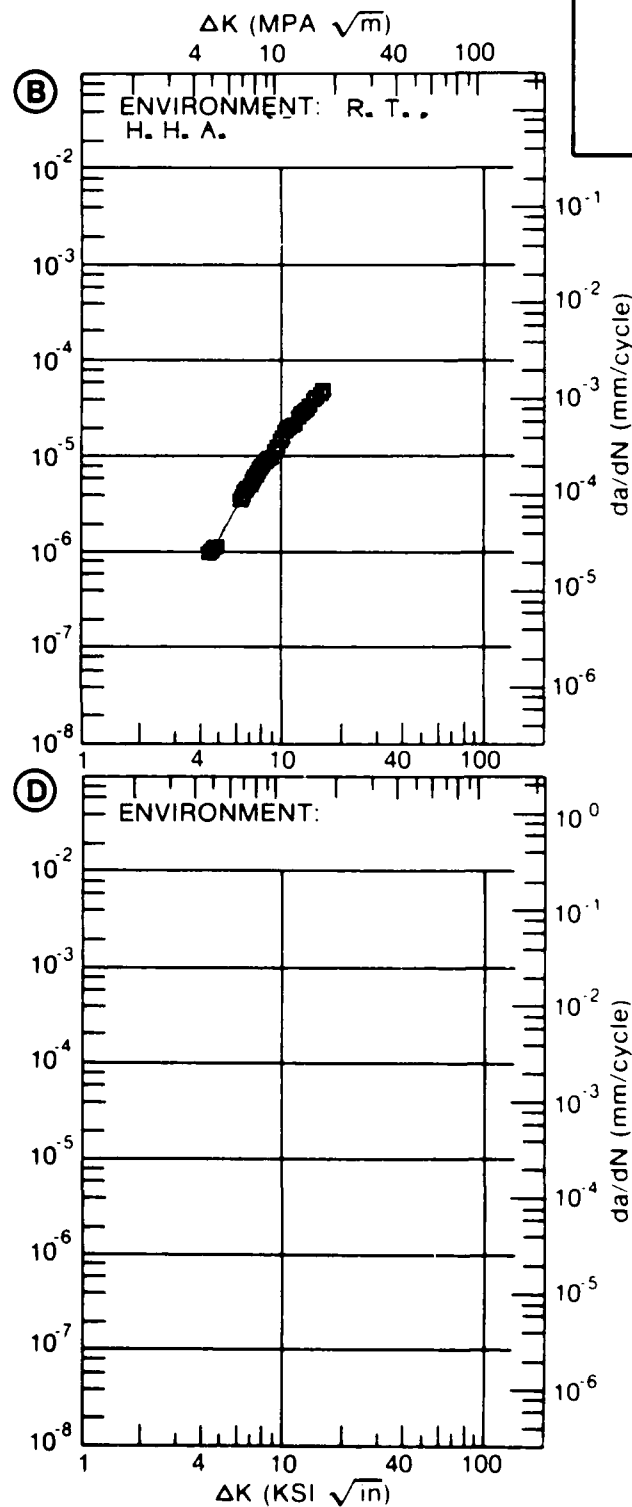
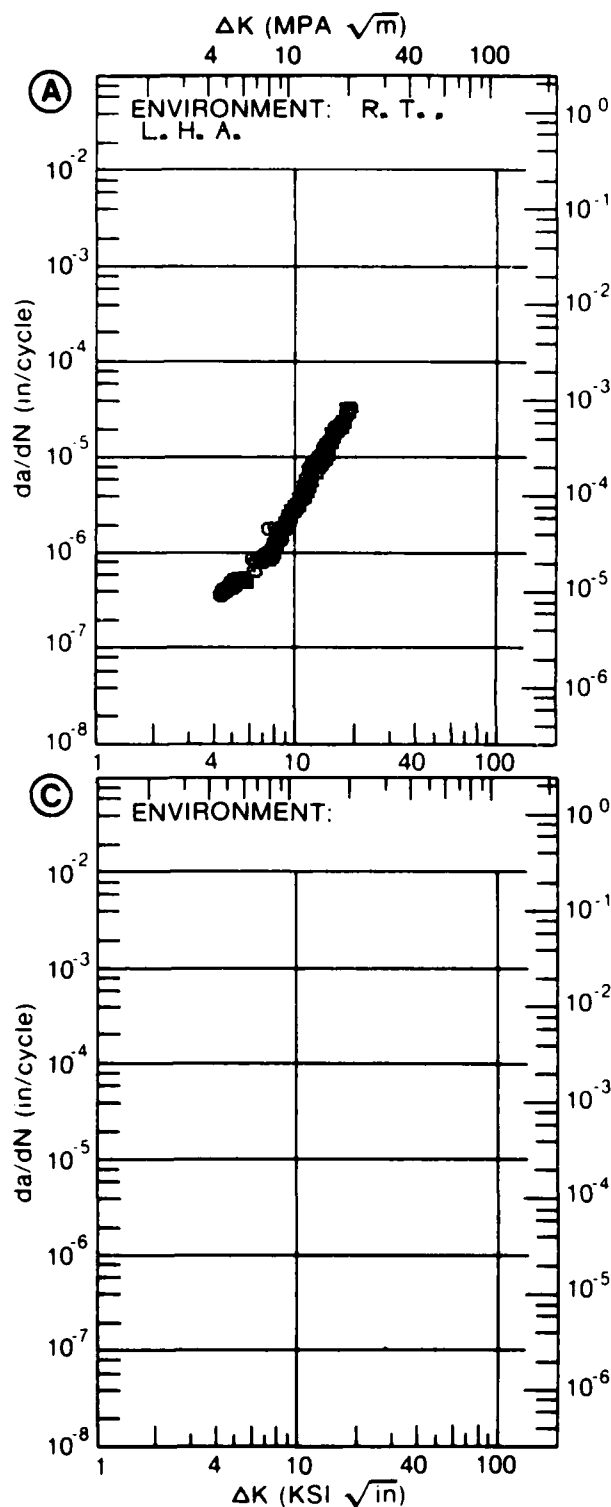


Figure 8.7.3.51

TABLE 8.7.3.52

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTORDATA ASSOCIATED WITH FIGURE 8.7.3.52 INDICATING EFFECT  
OF ENVIRONMENTMATERIAL: ALUMINUM 7050  
CONDITION: T7651X

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R. T. L. H. A.	E= R. T. H. H. A.		
DELTA K MIN	A:	4.41	417		
	B:	3.25		140	
	C:				
	D:				
	3.50			168	
	4.00			436	
	5.00	880	2.05		
	6.00	1.62	4.44		
	7.00	2.39	6.91		
	8.00	3.26	9.47		
	9.00	4.31	12.6		
	10.00	5.65	17.0		
	13.00	13.3			
	16.00	35.6			
DELTA K MAX	A:	16.78	46.8		
	B:	10.01		17.0	
	C:				
	D:				

ROOT MEAN SQUARE 9.49 13.76  
PERCENT ERRORLIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25  
SUMMARY 1.25-2.0  
(NP/NA) 2.0

2

2

CONDITION/HT: T7651X  
 FORM: Ø. 91" TH EXTRUSION  
 SPECIMEN TYPE: CT  
 ORIENTATION: T-L  
 STRESS RATIO: +0.33  
 FREQUENCY: 20.00 HZ

YIELD STRENGTH:  
 ULT. STRENGTH:  
 SPECIMEN THK: Ø. 900"  
 SPECIMEN WIDTH: 3.805"  
 REFERENCES: AL008

ALUM.  
 ALLOY

7050

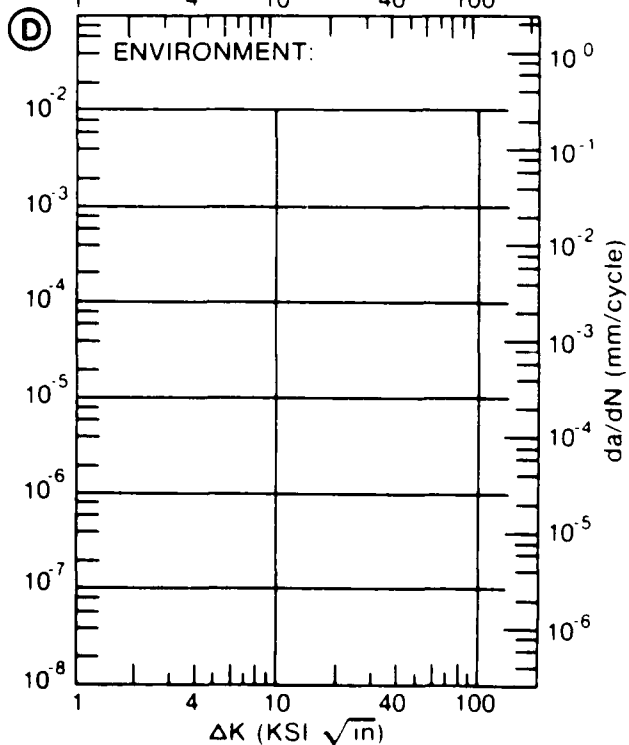
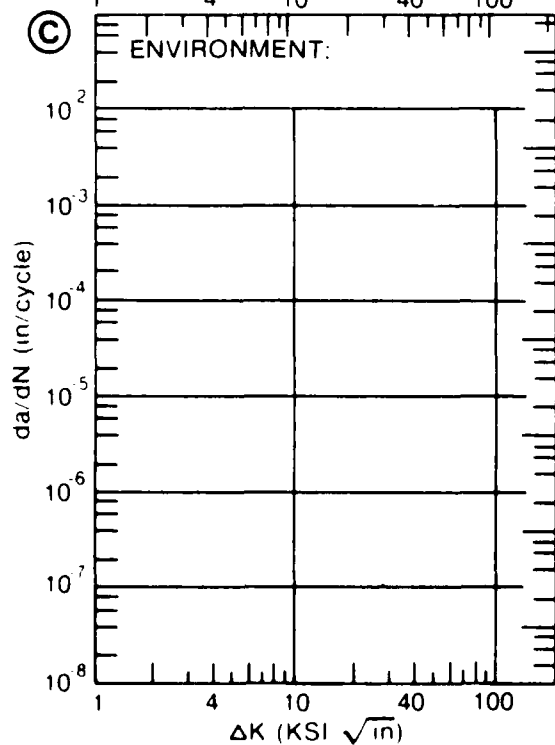
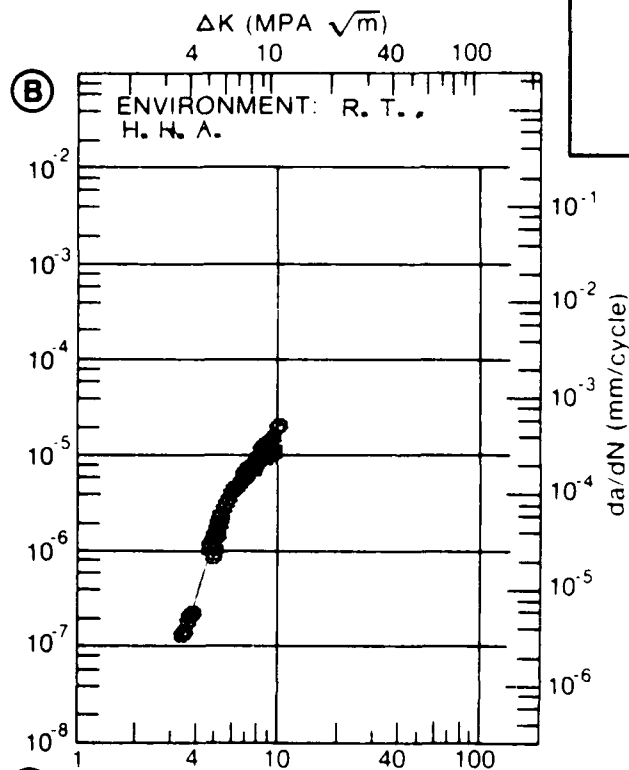
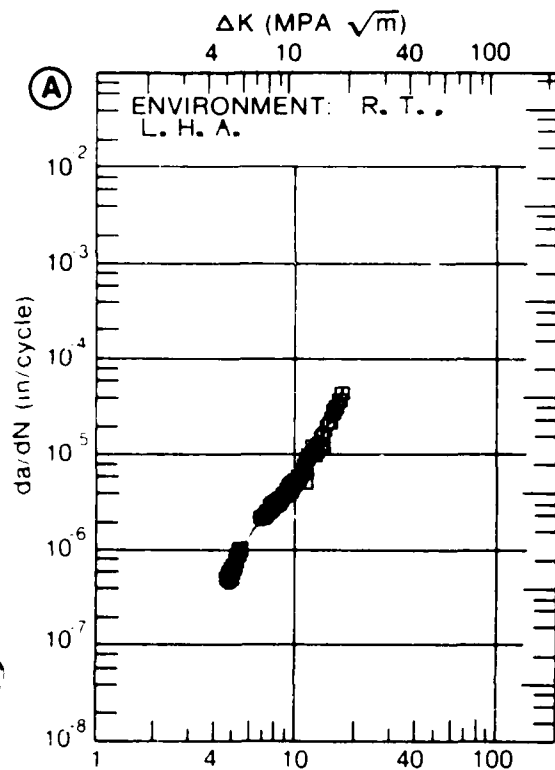


Figure 8.7.3.52

TABLE 8.7.3.53

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.7.3.53 INDICATING EFFECT

## OF STRESS RATIO

MATERIAL: ALUMINUM 7050  
 CONDITION: T76511  
 ENVIRONMENT: R T H H A

DELTA K (KSI*IN**1/2)		DA/DN (10**--6 IN./CYCLE)			
		A	B	C	D
		R=0.33			
DELTA K MIN	A:	7.24	6.34		
	B:				
	C:				
	D:				
		8.00	9.91		
		9.00	13.0		
		10.00	15.7		
		13.00	44.4		
DELTA K MAX	A:	14.85	73.1		
	B:				
	C:				
	D:				

ROOT MEAN SQUARE 14.39  
 PERCENT ERROR

LIFE 0.0-0.5  
 PREDICTION 0.5-0.8  
 RATIO 0.8-1.25 1  
 SUMMARY 1.25-2.0  
 (NP/NA) >2.0

CONDITION/HT: T76511  
 FORM: 6.00" TH PLATE  
 SPECIMEN TYPE: CT  
 ORIENTATION: T-L  
 FREQUENCY: 18.30 HZ  
 ENVIRONMENT: R. T., H. H. A.

YIELD STRENGTH: 59.1 KSI  
 ULT. STRENGTH: 70.5 KSI  
 SPECIMEN THK: 0.998"  
 SPECIMEN WIDTH: 3.801"  
 REFERENCES: AL004

ALUM.  
 ALLOY

7050

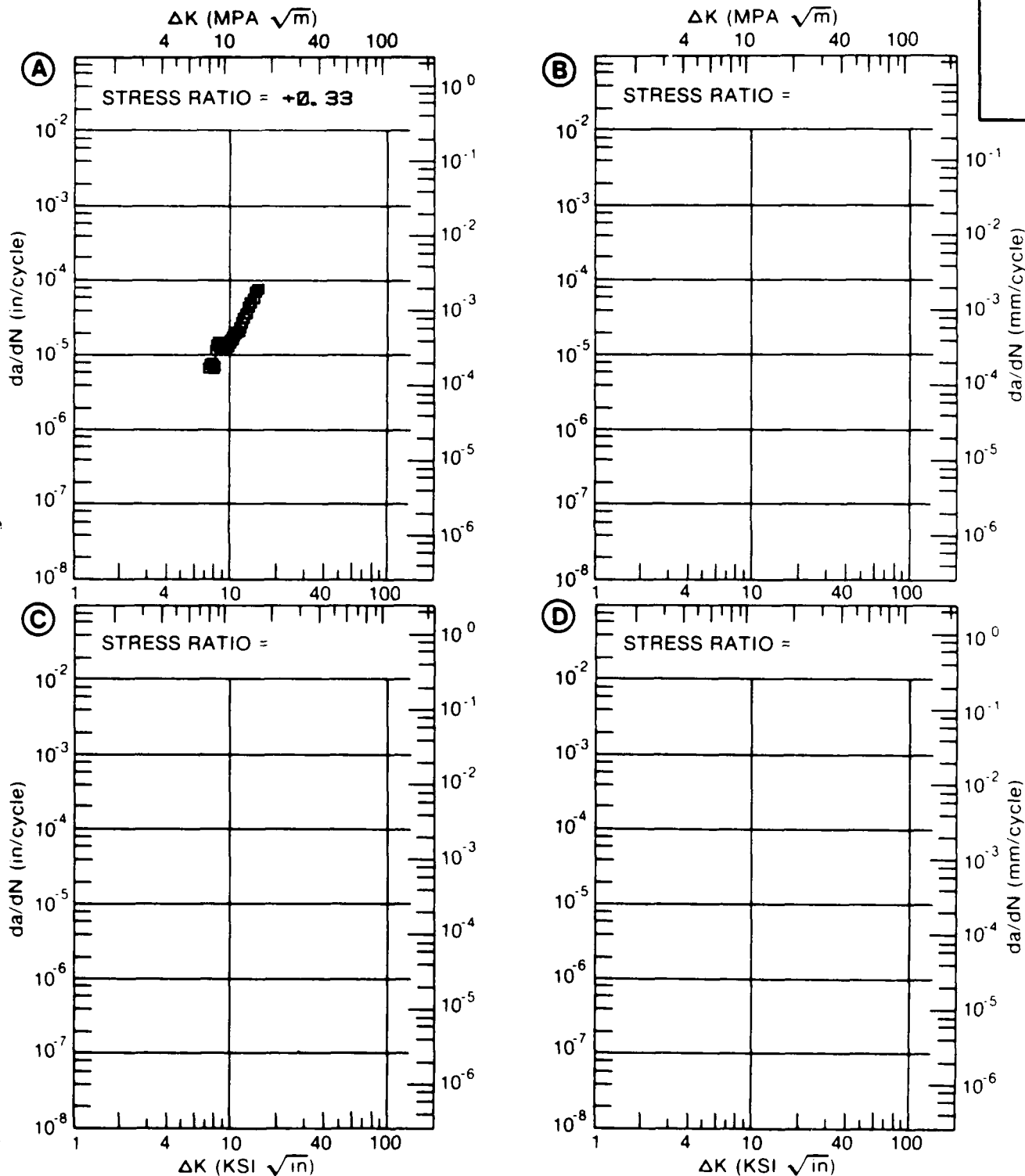


Figure 8.7.3.53

TABLE 8.7.3.54

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTORDATA ASSOCIATED WITH FIGURE 8.7.3.54 INDICATING EFFECT  
OF ENVIRONMENTMATERIAL: ALUMINUM 7050  
CONDITION: T76511

DELTA K (KSI*IN**1/2)		DA/DN (10***-6 IN./CYCLE)			
		A	B	C	D
		E= R. T. H. H. A. 2HZ	E= R. T. H. H. A. 20HZ	E= R. T. 3. 5% NACL 2HZ	E= R. T. 3. 5% NACL 20HZ
DELTA K MIN	A:	6.23	.778		
	B:	4.28	.146		
	C:	6.83		1.29	
	D:	3.12			.005
		3.50			.0279
		4.00			.123
		5.00	.152		.467
		6.00	.310		.772
		7.00	1.26	.735	1.41
		8.00	2.11	1.53	3.38
		9.00	3.25	2.76	7.86
		10.00	4.71	4.47	15.0
		13.00	11.3	12.6	44.1
		16.00	22.2	24.9	71.3
		20.00	46.3	46.8	99.5
		25.00	100.	81.3	138.
		30.00	198.	123.	205.
		35.00	369.	175.	338.
		40.00	660.	732.	
		50.00	1946.	1117.	
DELTA K MAX	A:	56.19	3645.		
	B:	37.08	212.		
	C:	59.30		1619.	
	D:	35.92			375.
ROOT MEAN SQUARE		19.51	14.25	11.29	20.13
PERCENT ERROR					

LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25	1	1	1	
SUMMARY	1.25-2.0				1
(NP/NA)	2.0				

CONDITION/HT: T76511  
 FORM: Ø. 44" TH EXTRUSION  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 STRESS RATIO: +Ø. 1Ø  
 FREQUENCY:

YIELD STRENGTH:  
 ULT. STRENGTH:  
 SPECIMEN THK: Ø. 151- Ø. 152"  
 SPECIMEN WIDTH: 3. ØØØ"  
 REFERENCES: 86844

ALUM.  
 ALLOY

7Ø5Ø

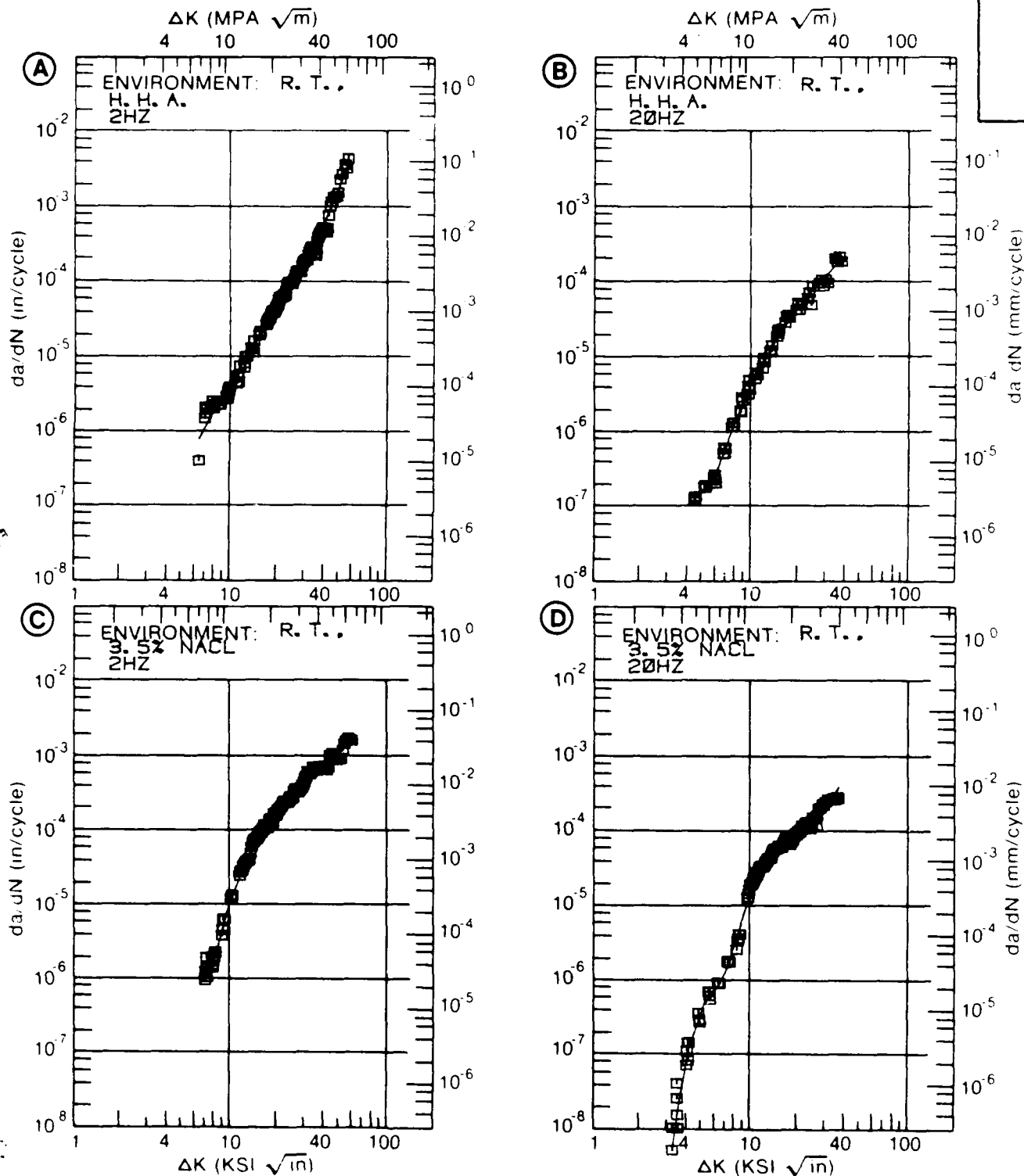


Figure 8.7.3.54



TABLE 8.7.3.55

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.7.3.55 INDICATING EFFECT

OF STRESS RATIO

MATERIAL: ALUMINUM 7050  
CONDITION: T76511  
ENVIRONMENT: R T , L. H. A.

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN. /CYCLE)			
		A	B	C	D
		R=+0.46			
DELTA K A:	6.63	2.12			
MIN B:					
C:					
D:					
	7.00	2.71			
	8.00	4.63			
	9.00	6.98			
	10.00	9.90			
	13.00	26.1			
DELTA K A:	15.21	56.7			
B:					
MAX C:					
D:					

ROOT MEAN SQUARE 5.30  
PERCENT ERROR

LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25 1  
SUMMARY 1 25-2.0  
(NP/NA) >2.0

CONDITION/HT: T76511  
 FORM: 1.16" TH EXTRUSION  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 FREQUENCY: 18.30 HZ  
 ENVIRONMENT: R. T., L. H. A.

YIELD STRENGTH: 76.4 KSI  
 ULT. STRENGTH: 83.6 KSI  
 SPECIMEN THK: 1.007"  
 SPECIMEN WIDTH: 3.100"  
 REFERENCES: AL004

ALUM.  
 ALLOY

7050

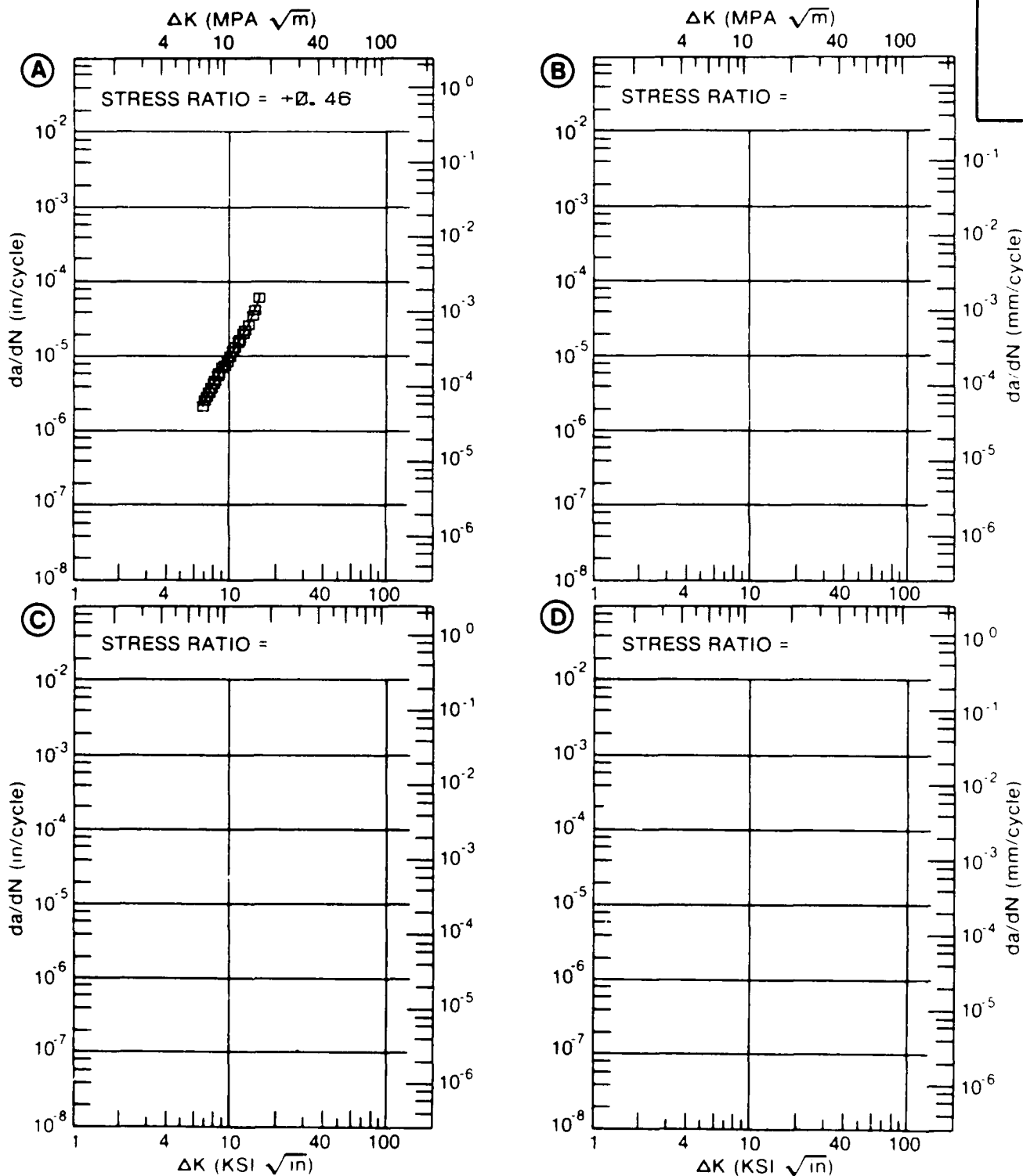


Figure 8.7.3.55

TABLE 8.7.3.56

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.7.3.56 INDICATING EFFECT  
OF ENVIRONMENT

MATERIAL: ALUMINUM 7050  
CONDITION: T76511

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R. T. L. H. A.	E= R. T. H. H. A.	E= R. T. SALT FOG	
DELTA K MIN	A: 4.53	.361			
	B: 4.95		.720		
	C: 4.52			1.55	
	D:				
	5.00	.419	.794	2.56	
	6.00	.626	2.83	7.06	
	7.00	.988	5.29	11.7	
	8.00	1.58	8.10	15.7	
	9.00	2.52	11.4	19.3	
	10.00	3.95	15.4	23.5	
	13.00		38.4	47.5	
	16.00		81.1		
DELTA K MAX	A: 11.55	7.62			
	B: 17.46		83.7		
	C: 15.13			70.2	
	D:				
ROOT MEAN SQUARE PERCENT ERROR		9.30	15.98	12.58	

LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25  
SUMMARY 1.25-2.0  
(NP/NA) >2.0

1

3

2

CONDITION/HT: T76511  
 FORM: 1.16" TH EXTRUSION  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 STRESS RATIO: +0.33  
 FREQUENCY: 19.30 HZ

YIELD STRENGTH: 76.4 KSI  
 ULT. STRENGTH: 89.6 KSI  
 SPECIMEN THK: 1.000- 1.007"  
 SPECIMEN WIDTH: 3.100- 3.801"  
 REFERENCES: AL004

ALUM.  
 ALLOY

7050

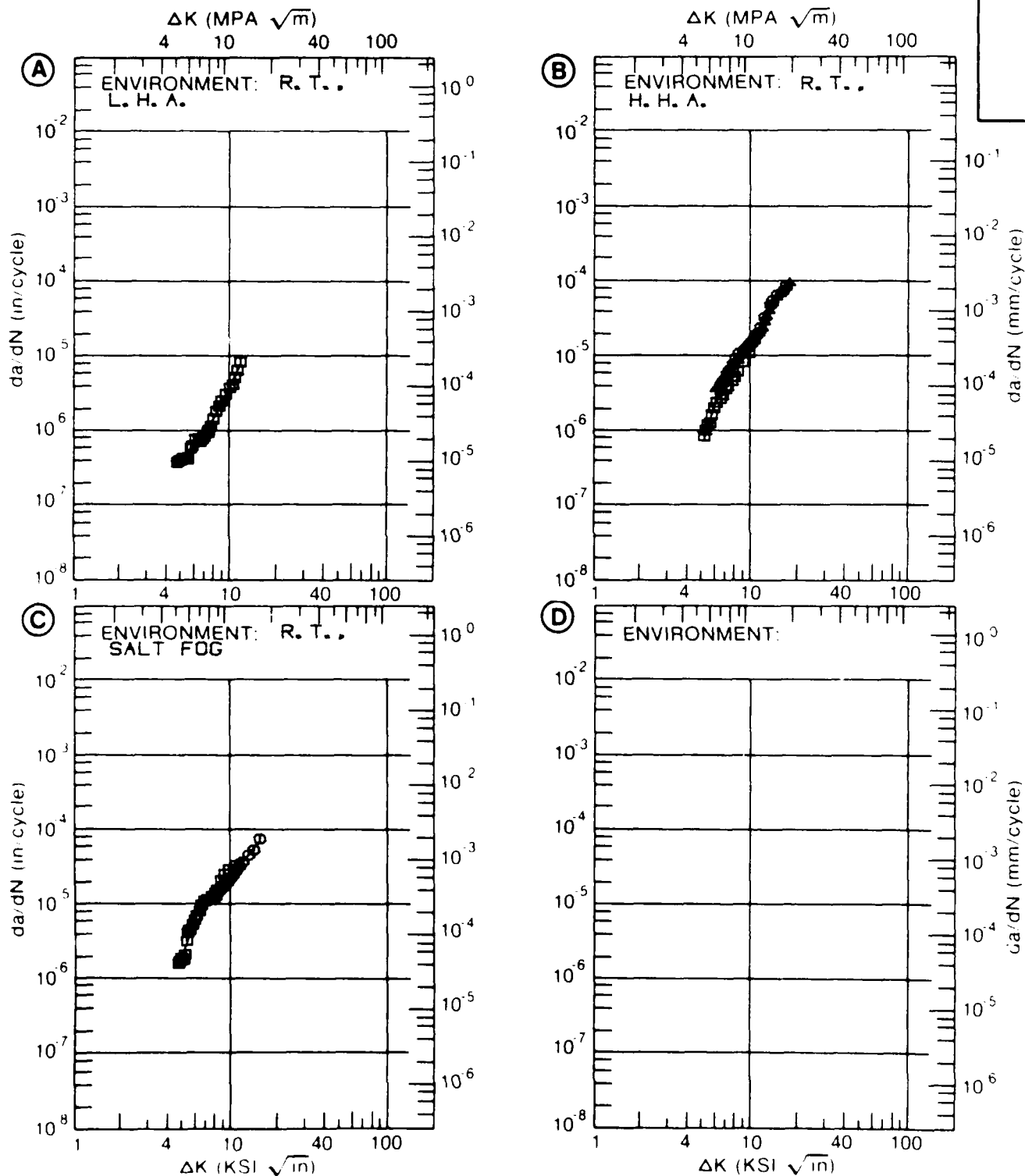


Figure 8.7.3.56

TABLE 8.7.3.57

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.7.3.57 INDICATING EFFECT

OF ENVIRONMENT

MATERIAL: ALUMINUM  
CONDITION: T76511

7050

DELTA K  
(KSI\*IN\*\*1/2)

DA/DN (10\*\*-6 IN./CYCLE)

A

B

C

D

E= R. T.

E= R. T.

E= R. T.

L. H. A.

H. H. A.

SALT FOG

DELTA K A: 3.86  
MIN B: 6.00  
C: 5.91  
D:

3.23

5.43

7.43

4.00

3.23

5.00

8.10

6.00

1.76

7.66

7.00

2.71

8.50

10.7

8.00

3.68

12.0

14.8

9.00

4.87

16.0

20.0

10.00

6.38

20.5

26.7

13.00

14.4

39.2

50.8

16.00

35.5

71.5

DELTA K A: 18.47  
MAX B: 17.14  
C: 14.15  
D:

93.4

89.7

53.6

ROOT MEAN SQUARE  
PERCENT ERROR

17.60

6.16

7.68

LIFE 0.0-0.5  
PREDICTION 0.5-0.8  
RATIO 0.8-1.25  
SUMMARY 1.25-2.0  
(NP/NA) >2.0

2

1

1

CONDITION/HT: T76511  
 FORM: 1.16" TH EXTRUSION  
 SPECIMEN TYPE: CT  
 ORIENTATION: T-L  
 STRESS RATIO: +0.33  
 FREQUENCY: 18.30 HZ

YIELD STRENGTH: 74.4 KSI  
 ULT. STRENGTH: 82.5 KSI  
 SPECIMEN THK: 0.999-1.000"  
 SPECIMEN WIDTH: 3.801"  
 REFERENCES: AL004

ALUM.  
 ALLOY

7050

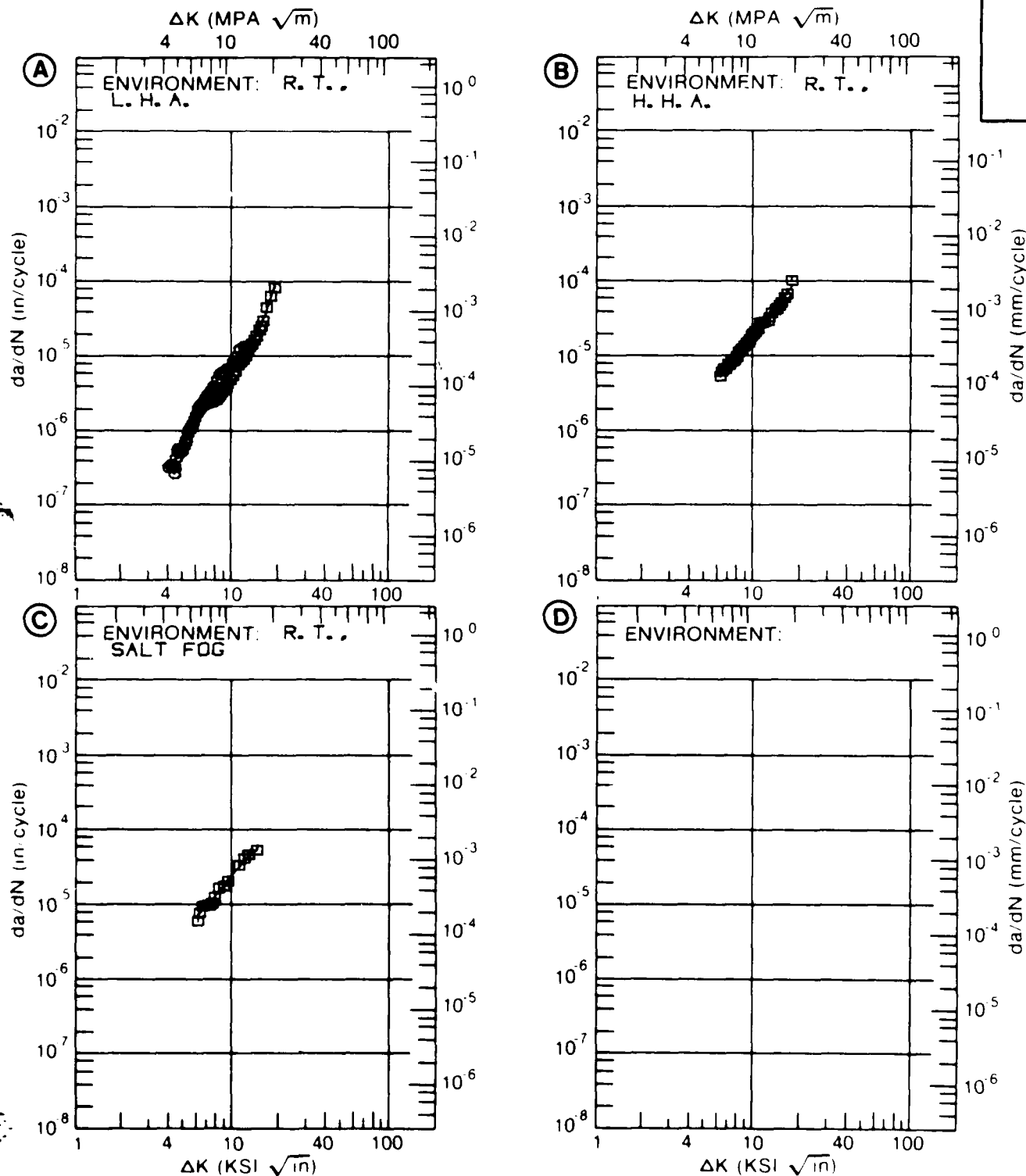


Figure 8.7.3.57

TABLE 8.7.3.58

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.7.3.58 INDICATING EFFECT

OF ENVIRONMENT

MATERIAL: ALUMINUM		7050			
CONDITION: T76511					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R. T. L. H. A.	E= R. T. H. H. A.	E= R. T. SALT FOG	
DELTA K	A: 5.78	1.06			
MIN	B: 5.91		4.95		
	C: 7.98			8.09	
	D:				
	6.00	1.17	5.23		
	7.00	1.73	8.19		
	8.00	2.31	10.7	8.17	
	9.00	2.89	13.4	12.6	
	10.00	3.45	16.8	17.1	
	13.00	4.90			
	16.00	5.97			
DELTA K	A: 18.83	6.69			
MAX	B: 10.86		21.2		
	C: 12.68			26.1	
	D:				
ROOT MEAN SQUARE		10.06	5.74	2.40	
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25	2	1	1	
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION/HT: T76511  
 FORM: 5.00" TH EXTRUSION  
 SPECIMEN TYPE: CT  
 ORIENTATION: L-T  
 STRESS RATIO: +0.33  
 FREQUENCY: 18.30 HZ

YIELD STRENGTH: 82.3- 82.6 KSI  
 ULT. STRENGTH: 87.6 KSI  
 SPECIMEN THK: 0.999- 1.003"  
 SPECIMEN WIDTH: 3.100- 3.801"  
 REFERENCES: AL004

ALUM.  
 ALLOY

7050

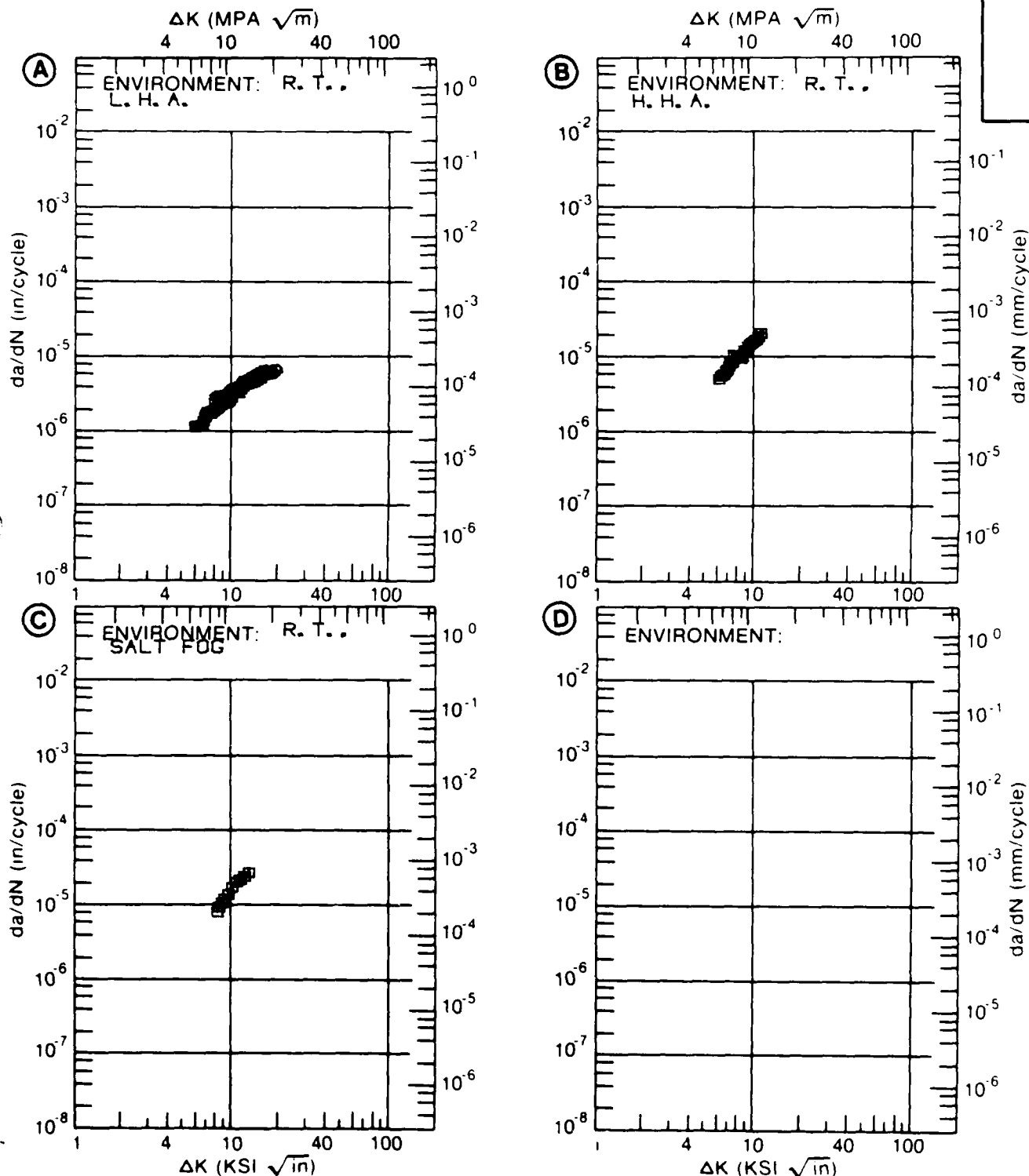


Figure 8.7.3.58



TABLE 8.7.3.59

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTORDATA ASSOCIATED WITH FIGURE 8.7.3.59 INDICATING EFFECT  
OF ENVIRONMENTMATERIAL: ALUMINUM 7050  
CONDITION: T76511

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R. T. L. H. A	E= R. T. H. H. A	E= R. T. SALT FOG	
DELTA K MIN	A:	5.82	1.43		
	B:	3.89	1.05		
	C:	5.89		5.92	
	D:				
		4.00	1.01		
		5.00	1.71		
		6.00	1.53	4.91	6.82
		7.00	2.38	11.9	14.9
		8.00	4.68	23.4	22.4
		9.00	12.4	41.0	35.8
		10.00	43.9	121.	73.8
DELTA K MAX	A:	10.02	45.2		
	B:	10.01	124.		
	C:	10.31		98.8	
	D:				

ROOT MEAN SQUARE	9.65	19.59	12.07
PERCENT ERROR			

LIFE	0.0-0.5
PREDICTION	0.5-0.8
RATIO	0.8-1.25
SUMMARY	1.25-2.0
(NP/NA)	>2.0

1

2

1

CONDITION/HT: T76511  
 FORM: 5.00" TH EXTRUSION  
 SPECIMEN TYPE: CT  
 ORIENTATION: S-L  
 STRESS RATIO: +0.33  
 FREQUENCY: 18.30 HZ

YIELD STRENGTH: 70.3- 82.3 KSI  
 ULT. STRENGTH: 76.5- 87.6 KSI  
 SPECIMEN THK: 0.958- 1.006"  
 SPECIMEN WIDTH: 3.800- 3.801"  
 REFERENCES: AL004

ALUM.  
ALLOY

7050

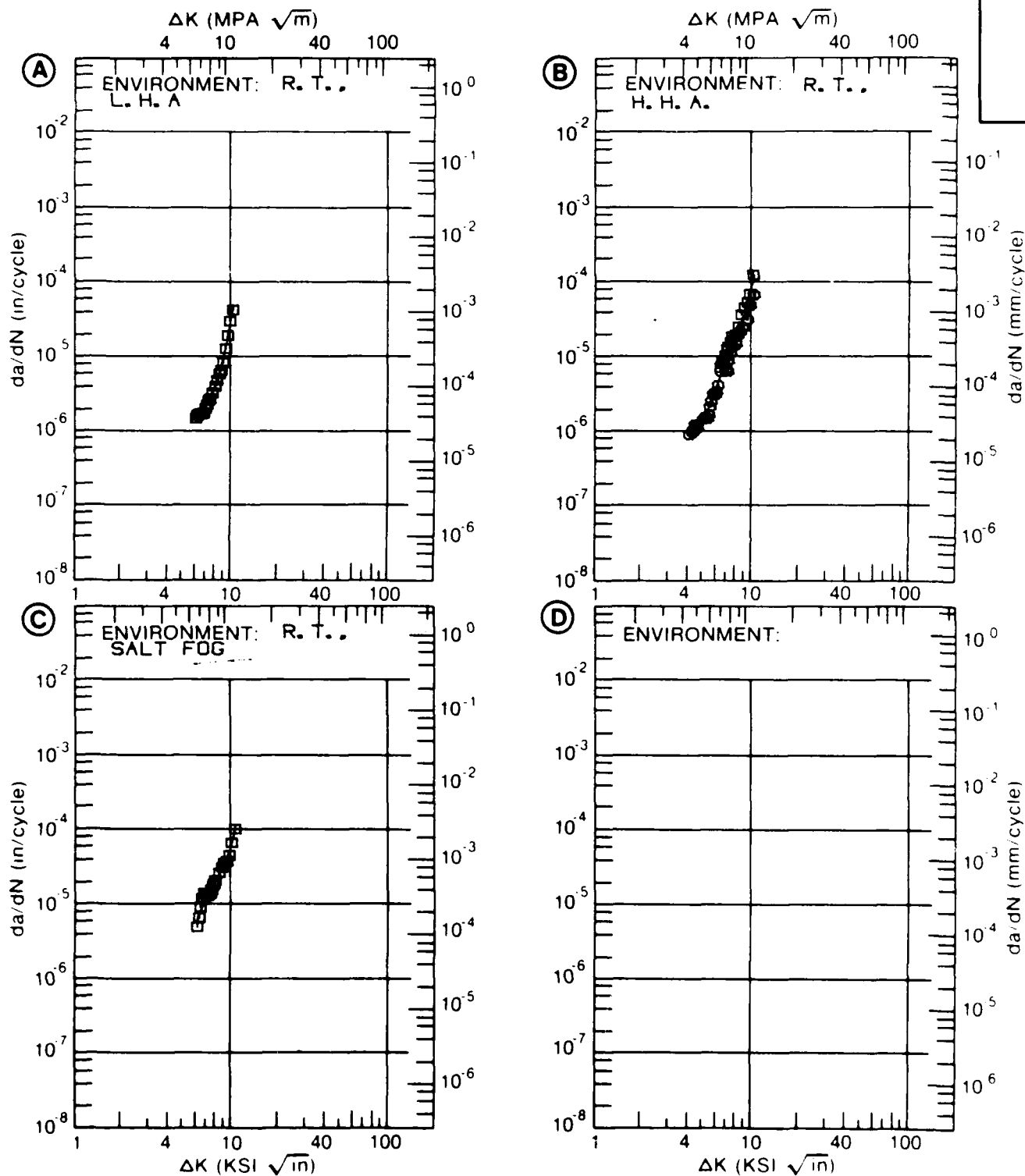


Figure 8.7.3.59

TABLE 8.7.3.60

CONDITION	--PRODUCT-- FORM THICK (IN)	TEST SPEC TEMP OR (F)	YIELD STR (KSI)	ENVIRONMENT	ALUMINUM		7050		K(IISCC)		STAN DEV	TEST TIME (MIN)	DATE REFER
							WIDTH (IN)	THICK (IN)	SPECIMEN-- THICK DESIGN (IN) (**SG)	CRACK LENGTH (IN)	MEAN K(IISCC) (KSI*SQRT IN)		
1736	F	0.25	R.T.	L-T	61.4	3.5	PCT NACL	---	---	DCB	31.10	28.20*	1973 86212
1736	F	0.25	R.T.	T-L	62.4	3.5	PCT NACL	---	---	DCB	28.10	24.50*	1973 86212
173651	P	4.00	R.T.	T-L	67.2	2	DIST WATER	5.000	1.250	TDCB	30.00	29.10	1972 84362
173651	P	4.00	R.T.	T-L	66.0	0.8	T.W.	5.500	1.000	DCB	43.00	27.50	133680 1976 R1006
		4.00			66.0			5.500	1.000	DCB	43.00	28.00	133680 1976 R1006
173651	P	4.00	R.T.	T-L	67.2	3.5	PCT NACL	5.000	1.250	TDCB	30.00	29.10	1972 84362
17651	P	1.25	R.T.	L-T	73.8	JP-4	FUEL	3.085	1.248	WDL *	1.086	22.40	1977 MA005
		1.25			73.8			3.078	1.253	WDL *	1.092	22.60	1977 MA005
17651	P	1.25	R.T.	L-T	73.8	SIM.	SEA WATER	3.082	1.249	WDL *	1.131	22.00	1977 MA005
		1.25			73.8			3.079	1.251	WDL *	1.131	21.90	1977 MA005
17651	P	1.25	R.T.	T-L	77.0	JP-4	FUEL	3.087	1.252	WDL *	1.156	22.50	1977 MA005
17651	P	1.25	R.T.	T-L	77.0	SIM.	SEA WATER	3.087	1.251	WDL *	1.101	22.30	1977 MA005
		1.25			77.0			3.086	1.252	WDL *	1.091	22.30	1977 MA005

\*NOTE-DATA WHICH DO NOT MEET MINIMUM SPECIMEN THICKNESS REQUIREMENTS OF 2.5(K(IISCC)/TVS)SQUARED

TABLE 8.8.1.1

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR  
ALUMINUM 7050 (ALCLAD)

TEST CONDITIONS

SPECIMEN  
ORIENTATION T-T

ENVIRONMENT L H A  
AT R T

CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQ (HZ)	DELTA K LEVELS (KSI SQRT(IN))	2.5	5	10	20	50	100
176	SHEET	0.00	13.30				4.68			
176	SHEET	0.33	13.30				6.90			
176	SHEET	0.67	13.30			1.70	2.35			

TABLE 8.8.1.2

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR

ALUMINUM 7050 (ALCLAD)

TEST CONDITIONS		ENVIRONMENT		FATIGUE CRACK GROWTH RATES				
CONDI- TION	ORIENTATION	PRODUCT FORM	STRESS RATIO	FREQ (HZ)	DELTA K LEVELS (KSI SQRT(IN))	2	5	10
						20	50	100
176		SHEET	0.00	13.30				8.03
176		SHEET	0.33	13.30			1.51	13.7
176		SHEET	0.67	13.30			2.47	27.7

TABLE 8.8.1.3

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF THE STRESS-INTENSITY FACTOR

ALUMINUM 7050 (ALCLAD)

## TEST CONDITIONS

SPECIMEN  
ORIENTATION T IENVIRONMENT SALT FOG  
AT R T

CONDITION/HT	PRODUCT FORM	STRESS RATIO	FREQ (HZ)	DELTA K LEVELS (KSI SQRT(IN))	FATIGUE CRACK GROWTH RATES (MICRO IN/CYCLE)					
					2	5	10	20	50	100
176	SHEET	0 00	13 30				11 6			
176	SHEET	0 33	13 30				21 4			
176	SHEET	0 47	13 30			4 82	39 0			



TABLE 8.8.3.1

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.8.3.1 INDICATING EFFECT

## OF ENVIRONMENT

MATERIAL ALUMINUM  
CONDITION T76

7050 (ALCLAD)

DELTA K (KSI*IN**1/2)		DA/DN (10** <sup>-6</sup> IN./CYCLE)			
		A	B	C	D
		E= R. T. L. H. A.	E= R. T. H. H. A.	E= R. T. SALT FOG	
DELTA K MIN	A:	5.02	.763		
	B:	4.99	1.50		
	C:	5.11		2.27	
	D:				
	5.00		1.51		
	6.00	1.77	2.76	4.74	
	7.00	2.91	4.55	8.28	
	8.00	4.05	6.93	12.3	
	9.00	5.31	9.97	16.7	
	10.00	6.90	13.7	21.4	
	13.00	17.6	29.4	39.3	
DELTA K MAX	A:	14.99	39.6		
	B:	14.43	39.2		
	C:	14.62		53.3	
	D:				
ROOT MEAN SQUARE PERCENT ERROR		12.44	8.41	10.79	
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25	2	2	2	
SUMMARY	1.25-2.0				
(NP/NA)	0.2 0				



CONDITION/HT: T76  
 FORM: 0.03- 0.13" TH SHEET  
 SPECIMEN TYPE: CCP  
 ORIENTATION: T-L  
 STRESS RATIO: +0.33  
 FREQUENCY: 13.30 HZ

YIELD STRENGTH: 65.1- 67.7 KSI  
 ULT. STRENGTH: 74.2- 76.2 KSI  
 SPECIMEN THK: 0.024- 0.122"  
 SPECIMEN WIDTH: 3.999- 4.001"  
 REFERENCES: AL012

ALUM.  
 ALLOY

7050  
 (ALCLAD)

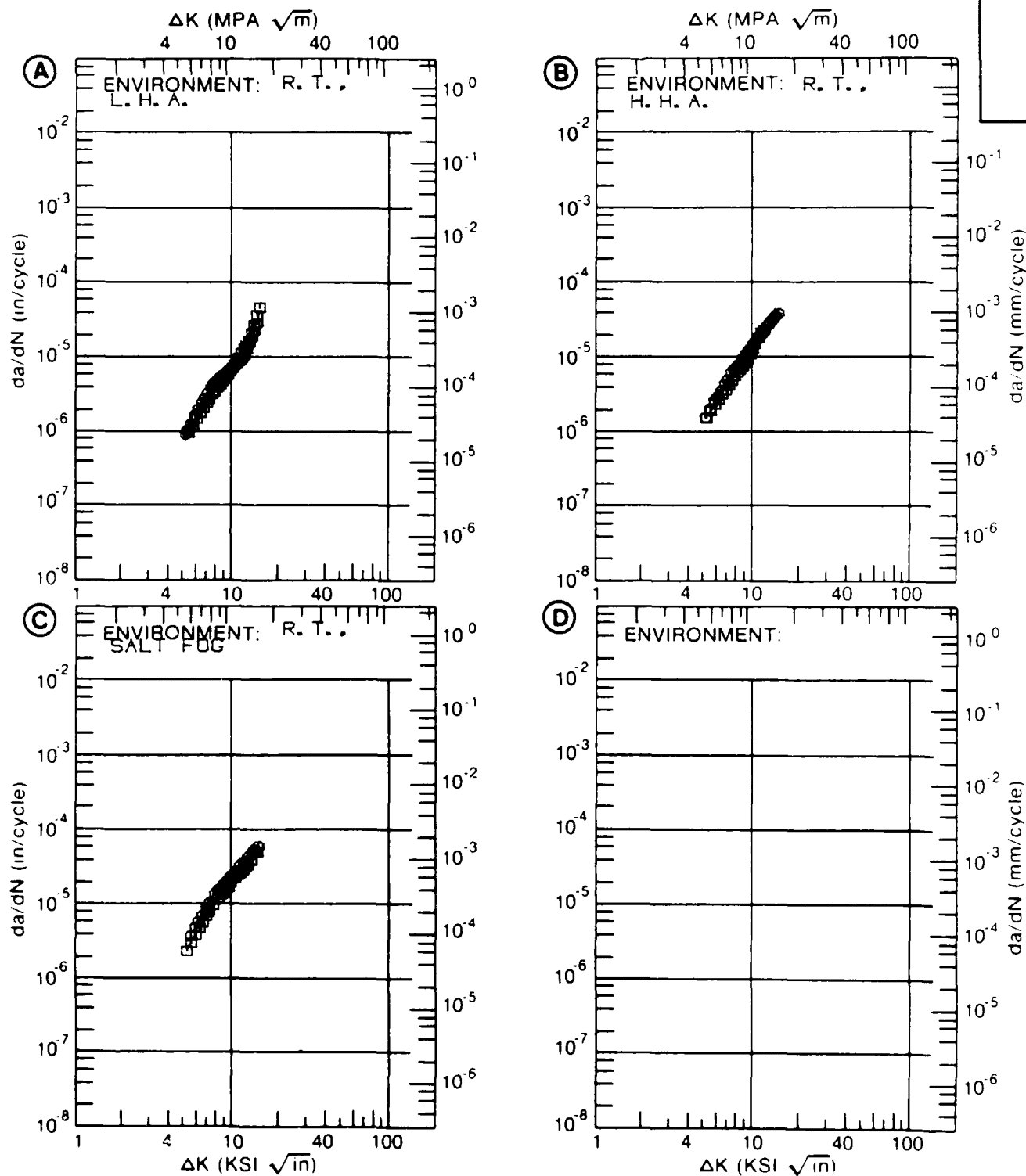


Figure 8.8.3.1

TABLE 8.8.3.2

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.8.3.2 INDICATING EFFECT  
OF ENVIRONMENT

MATERIAL: ALUMINUM  
CONDITION: T76

7050 (ALCLAD)

DELTA K (KSI*IN**1/2)		DA/DN (10** <sup>-6</sup> IN./CYCLE)			
		A	B	C	D
		E= R. T. L. H. A.	E= R. T. H. H. A.	E= R. T. SALT FOG	
DELTA K MIN	A:	5.07	.729		
	B:	5.08	1.51		
	C:	5.70		4.90	
	D:				
	6.00	1.69	2.85	5.92	
	7.00	3.06	4.82	10.0	
	8.00	4.63	7.33	15.2	
	9.00	6.35	10.4	21.3	
	10.00	8.19	14.0	28.1	
	13.00	15.3	29.4	51.6	
	16.00	27.4			
DELTA K MAX	A:	16.45	30.0		
	B:	14.28	38.5		
	C:	14.10		60.8	
	D:				
ROOT MEAN SQUARE		4.79	2.06	2.81	
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25	1	1	1	
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION/HT: T76  
 FORM: Ø. 13" TH SHEET  
 SPECIMEN TYPE: CCP  
 ORIENTATION: L-T  
 STRESS RATIO: +Ø. 33  
 FREQUENCY: 13. 7Ø HZ

YIELD STRENGTH: 67. 3 KSI  
 ULT. STRENGTH: 75. 2 KSI  
 SPECIMEN THK: Ø. 121"  
 SPECIMEN WIDTH: 4. ØØ1"  
 REFERENCES: ALØ12

ALUM.  
 ALLOY

7Ø5Ø  
 (ALCLAD)

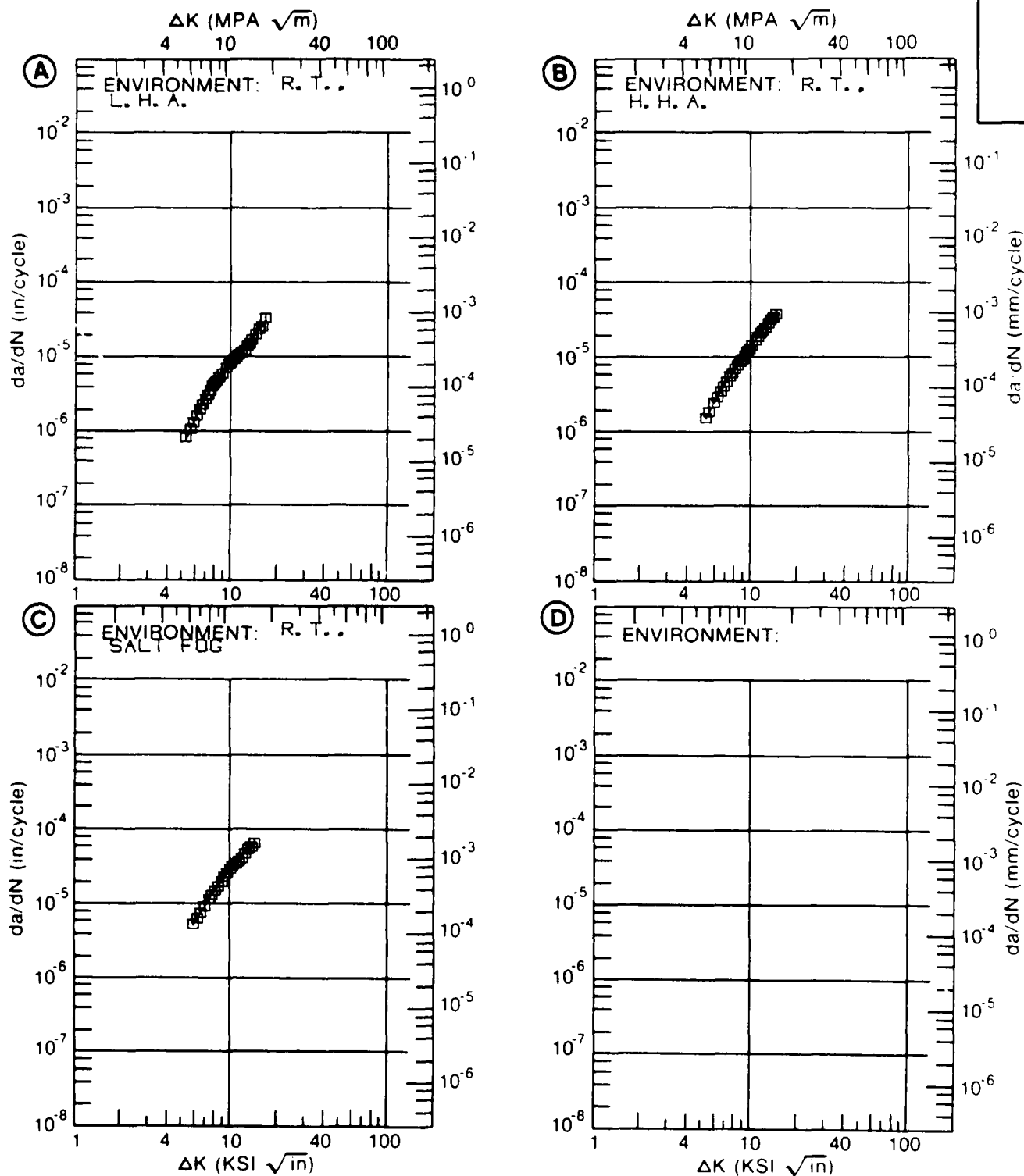


Figure 8.8.3.2

TABLE 8.8.3.3

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.8.3.3 INDICATING EFFECT

## OF ENVIRONMENT

MATERIAL: ALUMINUM		7050 (ALCLAD)			
CONDITION: T76					
DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R. T. L. H. A.	E= R. T. H. H. A.	E= R. T. SALT FOG	
DELTA K	A: 5.75	.541			
MIN	B: 5.77		.944		
	C: 5.81			1.99	
	D:				
	6.00	.695	1.19	2.27	
	7.00	1.49	2.43	4.07	
	8.00	2.49	3.95	6.27	
	9.00	3.56	5.81	8.79	
	10.00	4.66	8.03	11.6	
	13.00	8.01	16.5	22.0	
	16.00	12.3	27.0	36.8	
DELTA K	A: 16.45	13.1			
MAX	B: 16.53		29.1		
	C: 16.50			39.9	
	D:				
ROOT MEAN SQUARE		5.27	3.32	4.58	
PERCENT ERROR					
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25	1	1	1	
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION/HT: T76  
 FORM: 0.13" TH SHEET  
 SPECIMEN TYPE: CCP  
 ORIENTATION: T-L  
 STRESS RATIO: +0.00  
 FREQUENCY: 13.30 HZ

YIELD STRENGTH: 67.7 KSI  
 ULT. STRENGTH: 76.2 KSI  
 SPECIMEN THK: 0.121"  
 SPECIMEN WIDTH: 4.001- 4.002"  
 REFERENCES: AL012

ALUM.  
 ALLOY

7050  
 (ALCLAD)

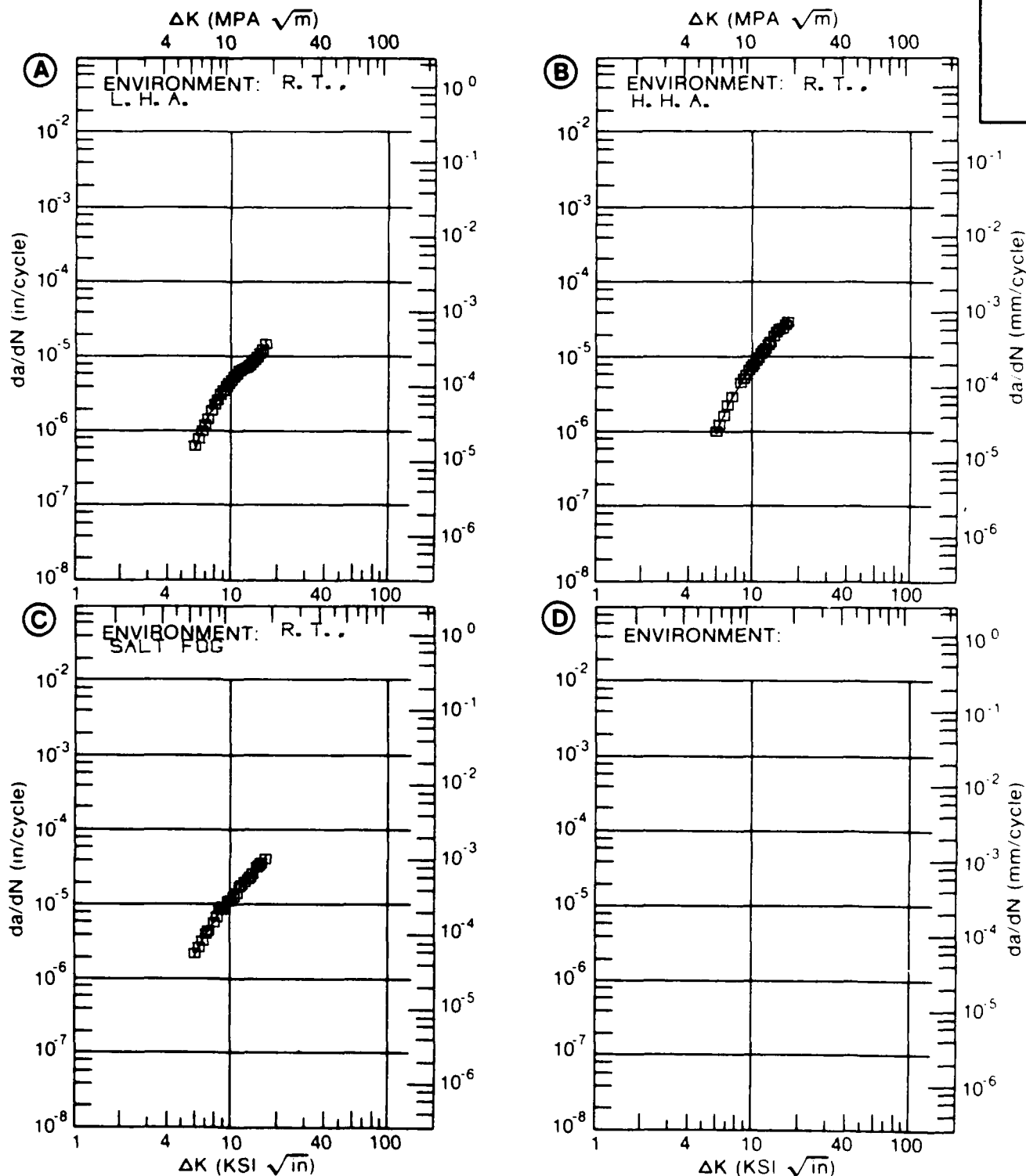


Figure 8.8.3.3

TABLE 8.8.3.4

FATIGUE CRACK GROWTH RATES AT DEFINED LEVELS  
OF STRESS INTENSITY FACTOR

DATA ASSOCIATED WITH FIGURE 8.8.3.4 INDICATING EFFECT

OF ENVIRONMENT

MATERIAL: ALUMINUM  
CONDITION: T76

7050 (ALCLAD)

DELTA K (KSI*IN**1/2)		DA/DN (10**-6 IN./CYCLE)			
		A	B	C	D
		E= R. T. L. H. A.	E= R. T. H. H. A.	E= R. T. SALT FOG	
DELTA K MIN	A:	3.41	.410		
	B:	3.56	.714		
	C:	3.51		1.06	
	D:				
	3.50	.453			
	4.00	.750	1.10	1.81	
	5.00	1.70	2.47	4.82	
	6.00	3.31	4.69	9.39	
	7.00	5.85	8.01	14.8	
	8.00	9.70	12.7	21.2	
	9.00	15.4	19.1	29.0	
	10.00	23.5	27.7	39.0	
DELTA K MAX	A:	10.22	25.7		
	B:	10.18	29.5		
	C:	10.50		45.2	
	D:				
ROOT MEAN SQUARE PERCENT ERROR		4.32	2.80	4.27	
LIFE	0.0-0.5				
PREDICTION	0.5-0.8				
RATIO	0.8-1.25	1	1	1	
SUMMARY	1.25-2.0				
(NP/NA)	>2.0				

CONDITION/HT: T76  
 FORM: Ø. 13" TH SHEET  
 SPECIMEN TYPE: CCP  
 ORIENTATION: T-L  
 STRESS RATIO: +Ø. 67  
 FREQUENCY: 13.3Ø HZ

YIELD STRENGTH: 67.7 KSI  
 ULT. STRENGTH: 76.2 KSI  
 SPECIMEN THK: Ø. 121- Ø. 122"  
 SPECIMEN WIDTH: 4. ØØ1"  
 REFERENCES: ALØ12

ALUM.  
 ALLOY

7Ø5Ø  
 (ALCLAD)

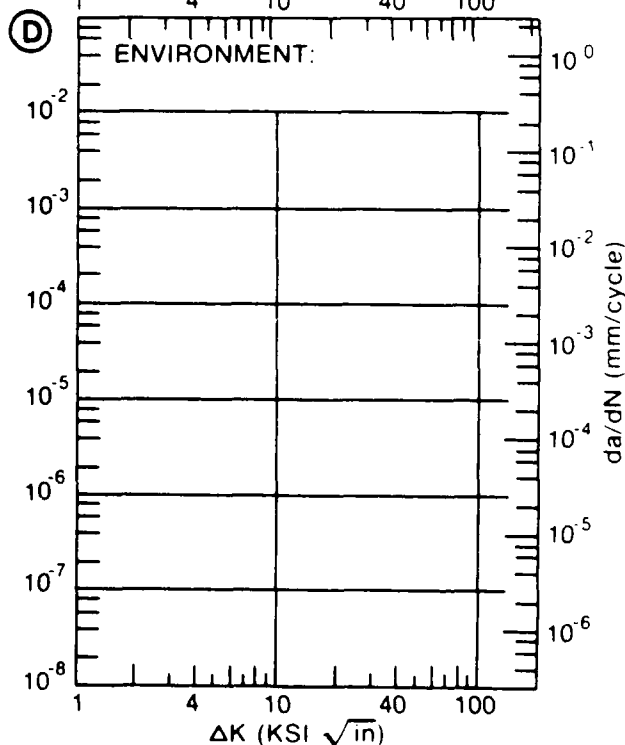
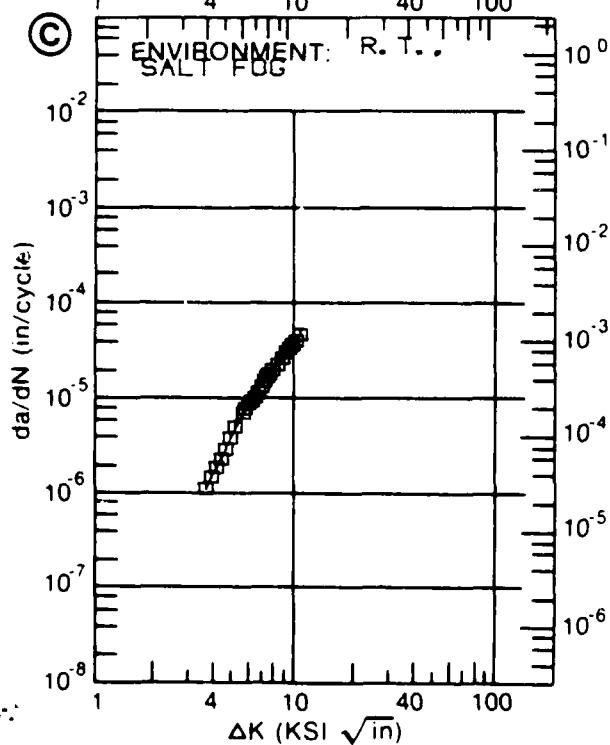
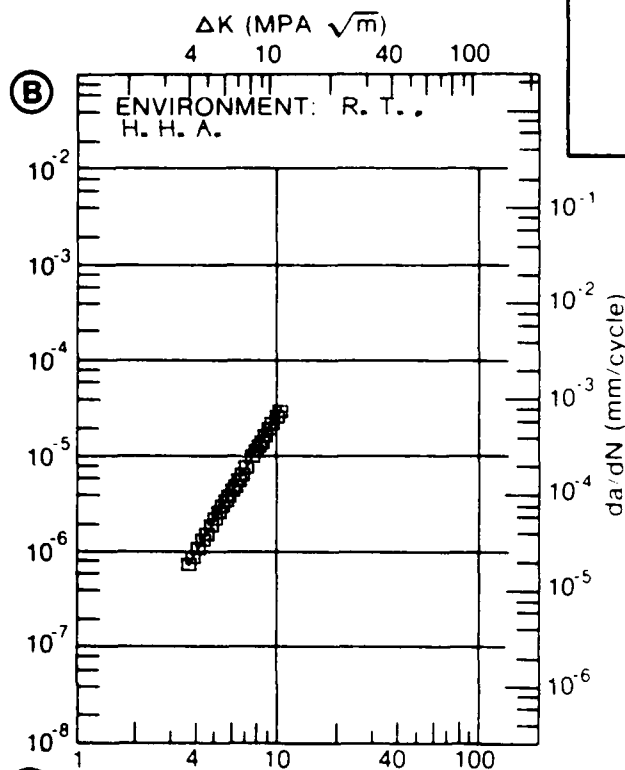
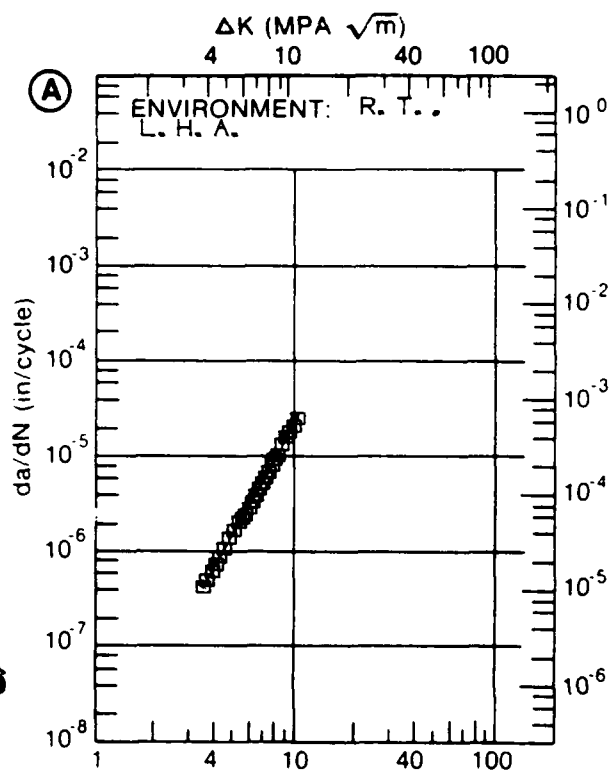


Figure 8.8.3.4